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THE AUTOMOBILE

The Growing Utility of the Automobile

AUTOTRACTOR LEAVING THE MILES OF PLOWED LAND BEHIND IT ON THE KANSAS PLAINS.

SINCE the earliest days of the automobile, those who have looked beyond its purely pleasure side have been prophesying its vast possibilities in a commercial way, and in none so much as an aid to the farmer. The traction engine and its capacity for hauling whole gangs of plows, harrows, or other agricultural machinery has made the vast farms of the western portion of this country possible. But the traction engine is a ponderous machine, due to its boiler, while its requirements in the way of fuel have made its use increasingly expensive, as both coal and wood are extremely scarce and high-priced commodities on the western plains.

What One Kansas Farmer Has Done.

It is a matter of common knowledge that experiments looking to the perfection of a commercially practical machine which can be marketed at a low figure have been under way in this country for some time past, but the investigators have been more or less chary of making public what they have learned up to the present. In the meantime a Kansas farmer has undertaken to solve the problem for himself, and, to judge from the reports of the working of his invention, appears to have succeeded in doing so to such an extent that a company is to be incorporated to place his machine on the market. He is Ansel S. Wysong, whose ranch is near Meade, Kan., and he calls his substitute for equine plow-pullers an *autotractor*. Considered as a whole, his machine does not differ a great deal from the ordinary traction engine, except that it is far lighter, much more powerful, and can get over the ground at a rate of speed that makes a tractor look like a selling plater.

He has mounted a 30-horsepower gasoline engine on a rigid frame carried on iron wheels with four-inch steel tires, so that neither spring nor tire troubles will come his way, while the drive is also designed to be troubleless, as it consists of a heavy chain. The weight of the autotractor is but 4,100 pounds—a figure that is not much in excess of what many a heavily loaded limousine will tip the scales at. Two speeds are provided, one for plowing and similar heavy work, and the other, or high speed, for hauling a train of grain-laden wagons along the road at the rate of six miles an hour. Even on the low speed in the field, the machine travels much faster than horses and turns six furrows at a time.

This does not complete its round of usefulness, however, as by uncoupling the engine and running it as a stationary it is made to operate a pump, saw, thresher, or other farm machinery. Furthermore, it is never at a loss for fuel, as it will burn gasoline, kerosene, or alcohol with equal ease. This machine has been built by a practical farmer, familiar with the requirements of the service to be performed, and it would appear as if he had considered every phase of the subject in designing it. The inventor says he has plowed thirty acres of land a day on a fuel consumption of fifty gallons of gasoline, and the machine has proved so successful as a whole that it is intended to build duplicates of it in a factory to be established at Topeka, Kan.

A Californian Has Evolved a Farmobile.

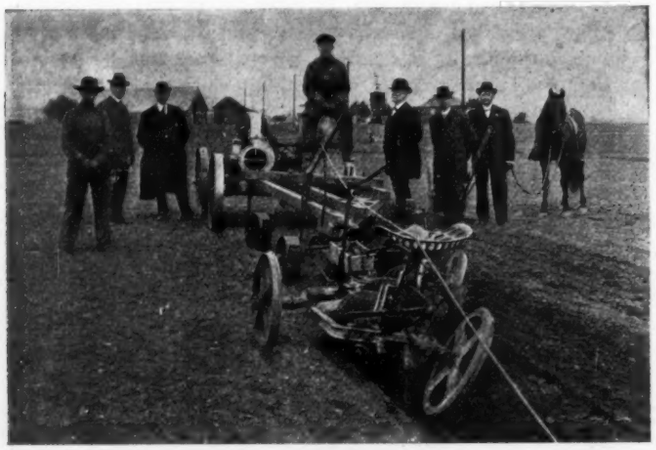
One of the difficulties of adapting the automobile motor to farm work has been this very lack of weight, which is such a great advantage in other ways, and another investigator, R. D. Vercler, of Los Angeles, Cal., has solved the problem in rather a unique manner. Without a great deal of weight it was hardly possible to obtain sufficient traction even with ribbed wheels and often the driving wheels simply gouged a hole in the ground

HENRY FORD AT THE WHEEL OF A FARMOBILE.

without moving ahead. To overcome these difficulties a system of propulsion consisting of a stationary cable anchored at opposite ends of the field to be worked was devised, together with a machine to run on the cable, and the latter has been christened the *Farmobile*. The car is equipped with a pair of drums operated by a four-cylinder air-cooled gasoline engine, as will be plain upon the reference to the photographs.

The car stands directly over the cable, a few turns of which pass round the drums, so that as the latter revolve they wind up the cable, moving the car along at a speed proportionate to the rate at which they turn. At each end of the car is a tension device, consisting of a pair of positively driven rolls, between which the cable passes, the rolls pressing against the cable and keeping it taut between the tension devices and the drums, so that the cable cannot become uncoiled on the drums. As there are several coils on the latter and the coils cannot possibly slip, the drums being positively driven, it will readily be evident that as long as the engine is connected to the driving mechanism the car is bound to travel ahead and haul its load, provided the latter be within its capacity to move. In use the cable takes care of itself and shifts to accommodate itself to the path in which the machine is steered. Each end of the cable is fastened to a pulley and the pulley rides along a cable arranged transversely to the propelling cable. The machine is provided with a steering wheel, the operating gear being somewhat similar to that regularly employed on automobiles.

When the machine is steered so that it rides along the propelling cable in a line at right angles to the end cable, the pulley lies still on the end cable; but when the machine is steered to the right or left to avoid an obstruction, the machine will draw the propelling cable into an angle with the end cable, whereupon the pulley naturally rolls along, carrying its end of the main cable to a point directly opposite the machine. In traveling back and forth across the field, the cable is shifted in this manner. This shifting action does not actually occur until the machine has approached somewhat close to the pulley, for when there is a long amount of the main cable on the tension side the weight of the cable and friction of moving it sideways on the ground prevents such movement. At all times, however, a short amount of cable immediately in front of the machine always swings to the right or left, when necessary, to suit the steering of the machine.



REAR VIEW SHOWING CABLE AND MACHINERY IN TOW.

The machine is equipped with gearing for reversing the drums to propel the machine backward along the cable, but the steering is difficult in such method of backward travel and in use the machine is turned around at each end of the field, so that it travels forward each time it traverses the field. To accommodate this, and to obviate the necessity of disengaging the cable from the drums, or of swinging the whole cable end for end, the main cable near each end has a section which is separable from the cable and forms a detachable link.

The machine when at either end of the main cable stands over the separable section or link, the latter then being wound around the drums and extending at each end somewhat beyond the machine. Then by unhooking both ends of the short section from the main cable, the machine is turned around, taking the section with it, and the section thus reversed by the machine is hooked into position again in the main cable, whereupon the machine can proceed forward. It may also be driven by its own wheels.

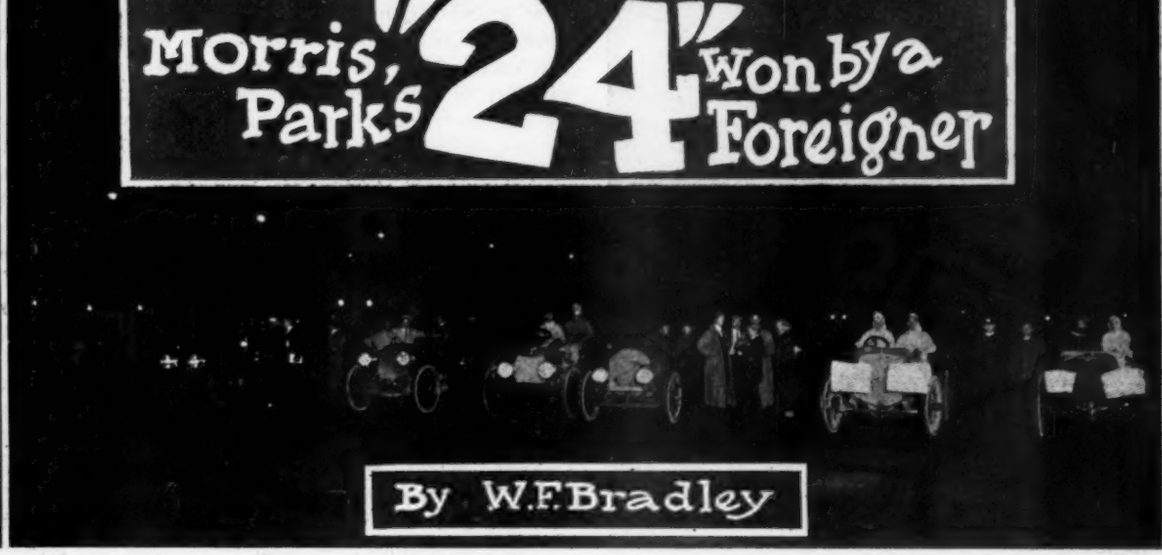
Two sizes of these machines are being made, the smaller of which is equipped with a 24-horsepower Frayer-Miller air-cooled engine, while the larger size has a 50-horsepower engine of the same make, the weights being 2,000 and 3,000 pounds, respectively.

Tests have shown that the capacity of the "24" is twenty-four acres a day of ten hours, the operations of plowing, harrowing and seeding being carried on simultaneously. For this work the cost of fuel has been figured at $1.50, with $2.50 for a man to run the machine and $1.50 for a helper, or a total of $5.50, which figures out at 25 cents an acre.

The daily capacity of the larger machine is 36 hours and the expense figures out at about $6. A pulley is installed on the front end of the machine directly over the forward axle, so that it can be used for threshing, pumping, or any of the many operations for which power is necessary on a farm. It can also be used for hauling and can pull a number of loaded wagons according to their weight and the nature of the roads. The capacities mentioned above are based on an average speed of three miles an hour, the small machine working a swath 8 feet wide, while the larger one works 10 feet, or if the ground has been broken previously, 16 feet. Four speed changes and reverse are provided on the drums, and the same is true of the traction and belt pulley, giving the vehicle speeds of from one to eight miles an hour.

The posts at each end of the field are placed 200 feet apart. It takes a man as long to change this end cable as it does to walk 400 feet, as it is simply unhooked from one, hooked over on the other, and then it is ready for another day's work. If at any time it is desired to run the machine out of the field, it is run up to the end and the small section unhooked, run out of the field on the traction power, only carrying enough cable to string through the machine, and after doing this the machine can come back and hook on to the cable and go right back to work where it left off. The cable used is 7-16 inch in diameter, with a breaking strain of 6,800 pounds, and the machine will pull all the cable will stand. Some of its other uses are in rooting out stumps and as power for housemoving. The photographs were taken on a bean ranch near Los Angeles.

Morris Park's "24" Won by a Foreigner



By W. F. Bradley

START OF THE 24-HOUR AT MORRIS PARK, THE WINNER BEING A RENAULT FROM FRANCE, DRIVEN BY LA CROIX AND BERNIN.

THE most remarkable feature of the 24-hour race at Morris Park track, New York City, last Friday and Saturday, was the ease with which Paul Lacroix and Meurice Bernin, driving a 35-45-horsepower Renault, rolled up their score of 1,079 miles, beating the Brighton Beach track record by 82 miles. At the extremity of the "24-hour camp" the Renault tent contained the usual equipment—tools lined up with military precision, tires, jacks and oil and gasoline cans—but they were never brought into use. Taking one of the turns at speed a rear tire blew out; it was replaced in two minutes, for Michelin dismountable rims were used. The only other visits to the tent were to replenish the gasoline and oil supply, the broad leather strap holding down the racing hood never being unfastened, and three of the tires which started on the machine being there at the finish with their steel-studded surface in good condition.

One hundred and seven miles behind the victor came No. 21 Lozier, driven by Smelser and Linkroum, with a score of 972. No. 6 Hotchkiss, delayed two hours by a fire caused by a smoker in the paddock, secured third place with 892 miles; fourth position fell to the Allen-Kingston, a newcomer to the automobile world, with 681 miles to its credit. The others—a Packard, a Matheson, and two Dietrichs—had retired from the grind.

Owing to some delay in lighting the track, the nine competitors were not sent away on their night and day struggle until 9 o'clock, or one hour later than the advertised time. The teams were:

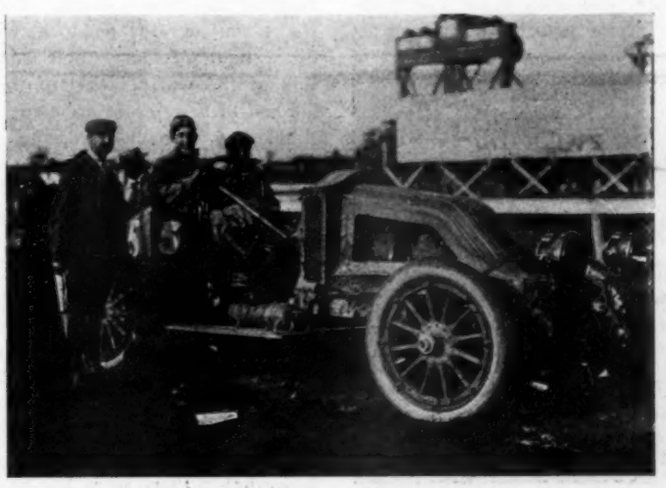
No. 1.—60-horsepower Dietrich, Frank Fuller and Chas. Barton.

No. 2.—60-horsepower Dietrich, George Mack and Thomas McMahon.

No. 3.—60-horsepower Matheson, J. B. Ryall and Charles Riffenberg.

No. 4.—30-horsepower Packard, Wallace Owen and Clarence Doty.

No. 5.—45-horsepower Renault, Paul Lacroix and Meurice Bernin.



OWNER LA CROIX AND PILOT BERNIN BESIDE THE RENAULT WINNER.

No. 6.—35-horsepower Hotchkiss, H. J. Kilpatrick and Harry Harkness.

No. 8.—60-horsepower Lozier, H. Michener and Ralph Mulford.

No. 9.—35-horsepower Allen-Kingston, A. L. Campbell and E. H. Belden.

No. 21.—40-horsepower Lozier, L. W. Smelser and William Linkroum.

Fuller's Dietrich set the pace, leading at the end of the first lap, with No. 8 Lozier second and Bernin on the Renault third. When one hour had elapsed Michener's Lozier had the lead with 48 miles, the Renault was second with 45 miles, the Packard third with 43, and Dietrich and Matheson tied with 40.

The additional length of the track, 1.39 miles, compared with the even mile at Brighton Beach, favored the racers, but complicated the scoring. The surface, too, though not in perfect condition, was slightly better than that of the race track four weeks ago, and there was not so much soft loose earth on the turns to bother the drivers at those points.

At the end of the second hour No. 8 Lozier had made the creditable performance of 100 miles, with Packard and Renault behind it, each with 92 miles. When the third hour had elapsed Michener's Lozier had added 43 miles more to its score, and Packard had got ahead of the Renault by one mile, their respective scores being 139 and 138. Fuller's Dietrich faltered early, its mileage for this hour being but six.

Ryall's Matheson was the first to abandon the game, for during the second hour a connecting rod stud bolt broke, causing such damage to the motor that a repair on the track was out of the question. About one hour later the Packard, after doing some fast work, went out of the game with a broken rear axle, leaving but seven competitors on the field.

Bernin got his lead during the fourth hour, when he ran up 179 miles and

TRACK SUPT. CAMACHO UTILIZED A FORD RUNABOUT.

left the Lozier seven miles in his rear. From this point to the end the Renault was never harassed by any competitor. During the night Bernin handled his machine cautiously, yet kept it going at such a regular even gait that, though slightly throttled down, he gradually drew away from the field.

Paul Lacroix relieved Bernin at 6 A. M., when the Renault was four miles ahead of the Jackson record made at the Brighton Beach track. With daylight it was possible to appreciate the masterly handling of the machine, Lacroix refusing to be hustled by machines which occasionally did faster sprints, and rolling off lap after lap with the regularity of a chronometer. As he neared the end of the straight opposite the grandstand, the engine was

POSITING HOUR BY HOUR IN 24-HOUR RACE FOR STOCK CARS.

Car and H.P.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.
Renault, 35	45	92	138	179	226	271	314	360	406	453	503	552	597	646	695	736	787	826	871	909	951	995	1,032	1,079
Lozier, 40	37	85	133	180	219	267	313	359	399	440	474	517	552	597	629	668	707	724	771	807	852	892	927	972
Hotchkiss, 35	39	80	123	153	172	215	243	282	322	347	393	433	478	517	563	604	649	691	723	750	782	826	862	892
Allen-K'gst'n, 35	29	47	47	63	100	133	154	198	236	265	296	333	353	362	401	431	456	456	456	456	579	617	642	681
De Dietrich, 60	40	85	128	154	194	240	249	249	249	280	319	320	320	320	343	390	431	482	500	540	Disabled timing gears			
De Dietrich, 60	37	69	75	107	150	186	212	244	275	293	293	324	387	364	401	414	414	425	447	464	495	Water jacket blew out		
Lozier, 60	48	100	143	172	176	215	240	240	286	328	375	422	426	Broke steering knuckle.										
Packard, 30	43	92	139	Broke axle.																				
Matheson 60	40	54	Broke connecting rod.																					

always cut out for the turn, and at exactly the same spot on each round the driver's foot was seen to press down the accelerator pedal. At times one of the Dietrichs or the Loziers would rush around the turn and cut in ahead of the Renault to the excited cheers of the crowd; but Lacroix refused to be moved, and though having power in reserve maintained his uniform average from beginning to end.

One of the few exciting incidents of the race occurred during the fourth hour when the Hotchkiss took fire. The gasoline tank had been filled and one of the helpers was in the act of screwing down the cap when the machine became enveloped in flames. Some one among the large number of idlers about the paddocks struck a match within a few feet of the machine. In all probability this was sufficient to ignite the gasoline vapors around the car and communicate the fire to the machine. Though little damage was done to the mechanical parts, nearly an hour was lost in getting the machine on the track again. Later the gasoline tank supports showed weakness as the result of the fire, causing another delay of one hour. But for this the Hotchkiss mileage would have been considerably increased.

PARDINGTON AND WEBB OBSERVE FROM AN ELEVATED PERCH.

Lozier had a series of ill-luck; No. 8 lost 35 minutes through the breaking of a front wheel and two hours as the result of a leaky gasoline tank, which had finally to be replaced by one taken from a touring car on the grounds. Soon after 9 o'clock on Saturday morning No. 8 Lozier broke a steering knuckle and went through the fence. Some of the spokes of the left front wheel had loosened shortly before on one of the turns, and their weakness brought about the defect in the steering gear which put an end to the car's career in the race.

About the same time No. 21 Lozier, then being driven by Linkroum, skidded seriously on the upper turn and dropped down a six-foot embankment.. Although apparently in good condition, and able to run down the course, the Lozier had to leave the track for repairs to be made to its frame, the forward cross member having been cracked. The radiator, too, was damaged.

Stopped to Put Turns Into Condition.

Nothing further of interest marked Saturday's run until 2 o'clock, when the race was called off for a couple of hours to allow the turns to be put into better condition. Five cars, the Renault, Lozier, Hotchkiss, Allen-Kingston, and Dietrich lined up opposite the grandstand, the Renault in the lead with 779 miles to its credit, being 79 more than the Lozier, No. 1 Dietrich, though announced as still in the contest, remained in the paddock during the two hours, undergoing repairs.

At the end of the twentieth hour No. 2 Dietrich retired in a disabled condition, the driver declaring that a pin had dropped out of the timing gears. No attempt was made to repair the car and before the end of the contest it was hitched to another machine and towed home. Before 10 o'clock Fuller's Dietrich No. 1 ran into the paddock, with the driver shouting excitedly for a light. A large hole had been blown in the right hand side of the water jacket of the two rear cylinders. This was the end of a series of accidents; one road wheel had broken, the clutch had been changed, the radiator had sprung a leak, and the engine had been overheating for the last two or three hours. Only a quarter of an hour before the accident the car had run into the paddock to cool off the radiator and take in more water. Fortunately the driver and mechanic escaped injury when the portions of metal flew into the air.

On starting the race after the afternoon interval the Hotchkiss car accidentally backed into the Allen-Kingston, injuring the radiator and cracking the side frame. On a protest being filed the committee allowed the car to be repaired, granting it 98 miles, based on its average running prior to the mishap.

Less than an hour from the finish, the Renault, then driven by Bernin, was signaled to stop at the grandstand and was informed that there were but 62 miles to cover to equal the non-competitive track record established by Clemens at Indianapolis

two years ago. Had he known his position earlier Bernin might have broken both the competitive and the non-competitive records, for since his lead was assured he had been driving at an easy gait, or as he expressed it in his native tongue, *à la papa*. The car's average for the twenty-four hours was 44.95 miles. At the end of six hours its average was 45.1 miles; at the end of the twelfth hour it was exactly 46 miles an hour.

The winning machine was a 35-45-horsepower runabout, 1907 model, having all the external features of the 120-horsepower racing car with which Szisz was first and second in the last two Grand Prix races. The motor and transmission were of standard type. Michelin steel studded anti-skid tires mounted on Michelin dismountable rims were employed.

With the exception of the Renault all the cars in the twenty-four-hour race were fitted with Diamond tires. The Matheson and Dietrich No. 1 used in addition Crescent rims. There was a general absence of tire trouble and a decided improvement in the manner in which changes were made. Work generally was done in a much more systematic manner in the paddock than was the case at Brighton Beach. Unfortunately, however, there were still too many idle sightseers around.

No doubt was allowed to arise as to the intention of the organizers of the meet to give the announced prizes, the silver cups being on exhibition near the judges' stand, and a certified check for $1,000 being displayed at the start by A. R. Pardington, acting chairman of the A. A. A. Racing Board. Credit is due to A. F. Camacho, track superintendent; A. B. Tucker, racing secretary; Alfred Reeves, chairman of the racing committee, and Engineer William B. Spencer for the very successful handling of the event. Announcement was made that another twenty-four-hour race will be held in three weeks, when all the minor defects of an initial meeting will be removed.

Results in the Other Events.

In the Friday afternoon race of 36 laps, or about fifty miles, there were seven starters, as follows: Frank O. Fuller, Dietrich; George Mack, Dietrich; Meurice Bernin, Renault; A. L. Campbell, Allen-Kingston; Arthur Warren, Stearns; George Robertson, Dietrich; and William Swan, Stearns. Mack led for the first three laps, with Warren second and Robertson third. In the seventh lap Robertson took second place from Mack and held it until the sixteenth lap, when a leaky tank put him down and allowed Mack to get second place again, Bernin on the Renault being third. Mack's Dietrich won the race in 56:49-4, Bernin's Renault being second in 1:00:35 and Campbell's Allen-Kingston third in 1:13:6-4.

George Mack won the four-lap invitation handicap for Dietrich cars in 6:56-2, Arthur Reppingill, starting scratch, was second, and Arthur Rowley was third.

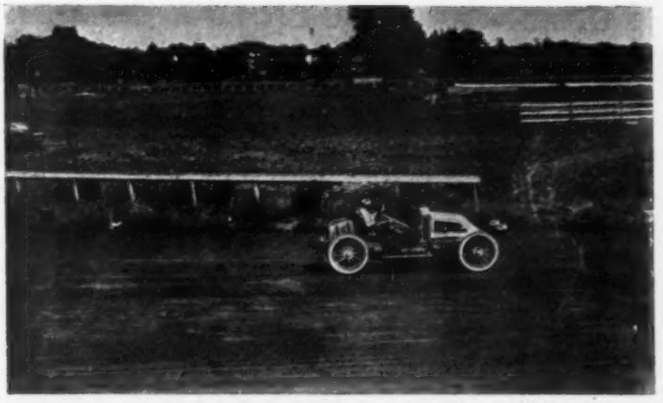
J. B. Ryall on a Matheson defeated Wallace Owen in a Haynes by about three-quarters of a mile in a four-lap match race, time 6:17-2.

For the flexibility test there were five starters. The B. L. M. and Hotchkiss were disqualified for stopping in their slow mile. Result was: Phil Hines, Pope-Hartford, 378 points; William Swan, Stearns, 273 4-5 points; A. L. Campbell, Allen-Kingston, 98 4-5 points.

George Robertson made an attempt to lower the mile record with the Hotchkiss Vanderbilt Cup racer. His time was :59 1-5.

During Saturday afternoon's interval Arthur Rawley on a Dietrich, won the obstacle race, run off in two heats and a final. In the auto polo match the same Dietrich was victor.

An unsuccessful attempt was made to lower the Christie and Chevrolet mile track record. George Robertson in the 1906 Vanderbilt Cup racer scored 54 2-5 seconds; Montague Roberts in the Thomas Vanderbilt racer was clocked in 60 1-5 seconds; Hemery's Vanderbilt Cup winner, driven by William McCulla, burned out its clutch leather on the trial run and was unable to do better than 1:34.



RENAULT WINNER IN FULL CRY AFTER ROUNDING UPPER TURN.

THE MINIATURE TENT VILLAGE OF THE CONTESTANTS.

THE LOZIER WHICH TOOK SECOND DESPITE MUCH HARD LUCK.

THE SIGN WHICH EXPLAINS WHY THE MEET WAS HELD.

STOCK CAR RACE ON LONG ISLAND.

The Metropolitan Automobile Association, through its president, T. F. Moore, on Monday last applied to the Board of Supervisors of Nassau county, in session at Mineola, Long Island, for the use of the Vanderbilt Cup course of 1906, such permission to include the holding of a two days' race for American stock touring cars, dates to be October 16 and 17, between the hours of daylight and noon, with 250 miles contested each day. The Supervisors took the application under advisement and asked the petitioner to supply more details concerning the management. A definite decision will be given in the near future.

The Metropolitan Automobile Association is the same organization which conducted the Fort George hill climb, August 3, in New York City. Mr. Moore, in his statement to the Nassau Supervisors, said that the association would bear all expenses in policing the course and guarantee the safety of the citizens. It is understood that Mr. Moore's plan would embrace the employing of 500 Pinkerton detectives.

The tentative conditions call for an entrance fee of $500 for each car, with a manufacturer limited to three cars. The trophy is to be offered by a "prominent sportsman" not named, and according to one daily paper "will be competed for by American stock cars only." Another daily announces that foreign stock cars will also be admitted to the contest.

The impression prevails that the Nassau county officials may exact conditions from the Metropolitan Automobile Association which its originators may find somewhat difficult to comply with. Prominent A. A. A. officials who have been connected with previous Vanderbilt Cup races are unanimous in the belief that there should be no road race except over a course guarded by soldiers.

Nevertheless, not a few manufacturers are interested in the holding of a race, and it is a certainty that it would attract many thousands of people to Long Island, possibly prove a success, and possibly be conducted without any fatal accidents. But the task is a trying one, according to those who have had previous experiences, and the belief exists that the promoters do not appreciate the amount of work involved.

NO DECISION YET IN CHICAGO "24"-HOUR MESS.

CHICAGO, Sept. 9.—The Chicago Automobile Club's special committee, consisting of Sidney S. Gorham, L. E. Myers and N. H. Van Sicklen, has not yet made its report to the board of directors of the club in reference to the much-discussed and criticised 24-hour race of July 12-13. The committee has not yet examined all of the witnesses.

At the meeting of the enlarged racing committee, held last week, it was decided that the club would hold another 24-hour race at the Harlem track and make it the best managed competition of its kind the country has ever seen. Tentative dates were selected for September 27-28, the event to be open to both steam and gasoline cars, and to be of the single-car variety.

MORRIS PARK'S SECOND 24-HOUR RACE.

That automobilists are enthusiastic for a 24-hour race is proven by the rush of entries made Tuesday when it was learned that the next twice-around-the-clock event would be held at the Morris Park track, New York City, September 27 and 28. A thousand dollars in gold coin will again be given to the winners, with gold medals to the winning drivers, and in addition it is planned to give a $20 gold piece to the car making the greatest number of laps each hour during the afternoon and evening of Saturday.

At a meeting Monday night, it was decided to make a number of changes. The paddock will be entirely fenced off, and each crew will be supplied with a colored badge. The signboard will be made four times as big, and instead of the regular announcement there will be a cinematograph telling all about the race, besides showing automobile scenes and famous contests.

CHRISTIE INJURED AT PITTSBURGH.

PITTSBURGH, Sept. 9.—Although one man had been killed and another badly injured in the event just preceding his appearance on the track, Walter Christie attempted to lower the track record of 58 seconds on the Brunot's Island track to-day in his 140-horsepower Grand Prix racer. The event in question was a 50-mile endurance run in which there were twelve starters. After having made several laps at good speed, Rex Reinertson, of Pittsburgh, who was driving a Haynes, upset on one of the back turns owing to a tire coming off. His mechanic, Clarence Bastion, was hurled clear of the car, but he was pinned beneath it. Despite the serious nature of the accident, no attempt was made to stop the event, and ten more laps were run off before it was called at the demand of Mayor Charles F. Kirschler, who compelled the referee, Congressman J. F. Burke, to stop it. Reinertson and his mechanic were hurried to St. John's Hospital, Allegheny, where the former died soon after, and it is thought that Bastion's chances of recovery are slim.

More than 4,000 spectators had gathered to witness the first of the two-day meet, but the crowd was not anxious for more after Reinertson's accident, and Barney Oldfield, who promoted the meet, gave an impromptu mile exhibition against time. Christie then came on in his front-driven racer. The track was in excellent condition, and he was confident of easily lowering the record by a considerable margin; he drove a preliminary warming-up mile, the latter half of which was covered in :24 flat, the car going by the stand with a rush. Reinertson's car had been shoved to one side, but did not clear the track, and a projecting end of the frame caught Christie's forward right wheel, causing his machine to fly into the air. He was hurled some distance, landing on his back, which was severely injured, his wrist broken, and his right eye cut by his goggles. The crowd swarmed on the track and the police were helpless, so that it was some time before Christie could be removed to St. John's Hospital.

CHRISTIE SAYS HE IS THROUGH WITH RACING.

PITTSBURGH, Sept. 10.—Walter Christie passed a fairly favorable day at the hospital. He is suffering from a broken wrist, a lacerated head, a sprained back, and injuries to his abdomen.

Mr. Christie stated that he had been thinking matters over, and had decided that he would not return to the race track. "Not because I have lost my nerve," he said, "but because I don't think that my wife and relatives will permit it."

Only the first race was pulled off to-day, on account of the rain. An enormous crowd had gathered, drawn by the excitement of the previous day.

CHRISTIE "STARRED" AT THE MINNESOTA FAIR.

MINNEAPOLIS, MINN., Sept. 9.—In the automobile races held on the Hamline track Saturday in connection with the Minnesota State Fair, Walter Christie went around the mile circle in 52 seconds, equalling the world's record made by himself at Boston and breaking the Minnesota record of a mile in 56 3-5 seconds, made by Barney Oldfield. The races were held under the auspices of the Minnesota State Automobile Association.

The big event of the meet was Christie's effort. His driving on the first corner was a wonder. He took the chance of a skid and carried the pole right around under his arm, going to the first quarter in :13 1-4, repeating the same daring performance at the second turn, and sweeping by the half-mile post in 26 seconds. Then came a bad stretch of track, and 39 seconds were gone when he reached the three-quarter mark; and then he struck a tremendous burst of speed, which carried him by the judges' stand with a record of 52 seconds.

Fast time was made in almost all the events, the liveliest being the five-mile contest for professionals, won by Christie.

Asa Paine, F. M. Joyce and L. A. Wood composed the board of referees.

ANOTHER CHAPTER OF SELDEN LITIGATION NEWS

"SELDEN '77 BUGGY PROVES ITS PRACTICABILITY"

From A. L. A. M. Publicity Bureau.

BROADWAY and Forty-ninth street was the scene of unusual activity Friday, September 6, when another demonstration of the original Selden gas buggy was given. The infringers of the patent have for some time been skeptical as to the practicability of the car and its ability to run either on flame or electrical spark ignition. The case, which has been in the courts for many years, has attracted widespread attention in the automobile industry, and as a decision is expected very shortly there is a renewed interest in every demonstration. The infringers of the patent, against whom suits have been brought for infringement, base their defense on the claim that the car built by Selden in 1877 was inoperative and impracticable for road use in any form, and that the car could not be run by its own power.

Several demonstrations to prove that it was practicable have been given, especially the one at the Guttenberg race track several weeks ago before the attorneys and experts for the defendants and complainants. At Guttenberg the car made a creditable showing, proving that it was operative to a degree which was far beyond the expectations of many of the observers. As that demonstration was made in private, many people believed that the car had not proved the claims of the owners of the patent.

"THE ORIGINAL SELDEN GAS BUGGY."

During its trials in and about Forty-ninth street, New York City, Paul Lacroix, American manager for the Renault Freres Co., and Emile Lamberjack, of Paris, were given an opportunity of trying out the first Selden vehicle, which was put through its various paces before an interested assemblage of spectators.

Friday's demonstration again proved that the old car, with its original cylinders, pistons, etc., was capable of doing what the inventor expected it would. It was first run on flame ignition up and down the street, and later run on electrical spark to show its versatility. Up and down the street, through a labyrinth of modern automobiles, trucks, and interested spectators the first automobile of a compression type ever built was run. To show its operativeness, the car was reversed, turned around, and backed up several times, much to the surprise and humiliation of those who have belittled the work of an inventor who had been able to make and operate a car fifteen years before anyone else and whose original invention is operative thirty years after.

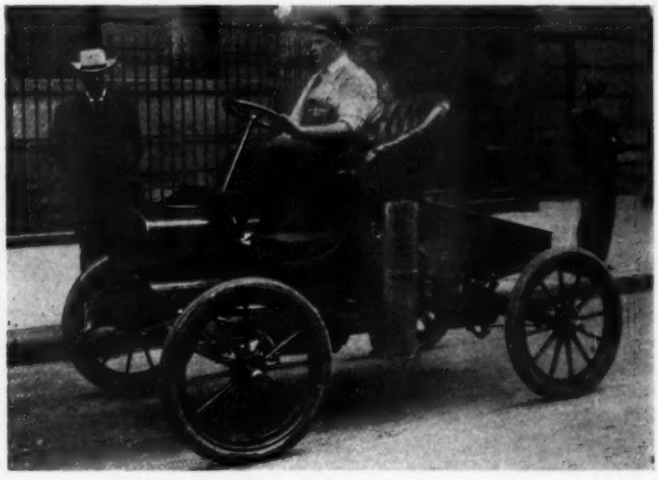
There were many interested witnesses who were surprised at the showing made by the old buggy, not the least being Paul Lacroix and E. Lamberjack, of Paris, who saw the car in operation for the first time. They were also given an opportunity of testing the weight of the claims of its backers with regard to its running powers by getting in and running it themselves.

"FORD FOLLOWERS SCORE ANOTHER VICTORY."

Sent by Ford Motor Company.

HENRY FORD and his followers scored another victory yesterday in the so-called Selden patent suit when his Lenoir car, built from patents issued in 1865, traveled about four times as far and four times as fast as what has been termed the Selden machine. The contest was held on Forty-ninth street, between Broadway and Eighth avenue, in the presence of about 100 spectators, including counsel and experts on both sides of the four-year-old suit which is claimed to involve the rights of the biggest proportion of the American manufacturers to make gasoline cars. Messrs. Cunz, Betts, and Gibbs represented the Selden side, with Messrs. Parker, Murray, Duryea, and Prof. Carpenter representing the Ford.

It was a case of 1865 beating 1877 without the slightest trouble, even when the Selden car ran, which generally was only for a few minutes at a time. In four and one-half minutes it stopped three times and in some cases would not run more than half a minute, while its longest trial was four and three-quarter minutes and its greatest speed 6 1-4 miles an hour. Once it ran the length of the Forty-ninth street block from Broadway to Eighth avenue, but was easily passed by the Lenoir—1865. The Selden test was claimed to be under flame ignition in accordance with the patent papers.



FORD'S REPLICA OF FORTY-YEAR-OLD PATENTS.

To refute the testimony of Dugald Clerk in the Selden action that a Lenoir engine could not be built light enough to operate a road vehicle, Henry Ford built this replica with a Festugier carbureter, the patents on this and the engine dating back to 1865, antedating the Selden invention by a number of years.

It was not expected that the Lenoir car would be on hand for the comparative tests, but Mr. Parker had brought on the driver from the Ford factory in Detroit. The Lenoir, which is claimed to antedate the Selden engine, ran with two people from the garage to Ninth avenue, and then to Sixth avenue, crossing ten car tracks. In accordance with the ruling of the trial, its spark was fastened in one position so there could be no advancing of the spark. A request that the Selden car cross the tracks was refused. Then the Ford people offered to race the Selden car a 50-mile race, giving it a 45-mile start over the Lenoir. This, too, was declined. It was noticed the Selden car started only when facing down the street grade, and was always pushed around to that position before any attempt to start it was made.

The Ford people claim yesterday's trial not alone proved the superiority of the Lenoir 1865 over the Selden 1877, but that the latter was not practical in any sense, and that even with constant nursing and fussing it will only amble by fits and starts.

CLEVELAND'S SEALED BONNET TEST.

By W. F. BRADLEY.

CLEVELAND, O., Sept. 10.—The Cleveland Automobile Club's three-fold automobile competition has practically resolved itself into a single event owing to the lack of support from manufacturers and dealers. The electric vehicle contest failed to draw any entrants, notwithstanding the fact that Cleveland possesses a greater number of private electrics than probably any city in the country; the commercial vehicle test only appealed to two firms, the Gaeth and the American Motor Truck Company, the latter's truck competing while performing its ordinary duties.

Eight touring cars started from the Hollenden Hotel at three-minute intervals this morning in the sealed bonnet test:

Buick, 2-cylinder; driver, George Bettissi.
Buick, 4-cylinder; driver, J. T. Trumbull.
Mora, 4-cylinder; driver, J. W. David.
Gaeth, 2-cylinder; driver, Paul Gaeth.
Cartercar, 2-cylinder; driver, B. J. Carter.
Jackson, 2-cylinder; driver, R. Burman.
Cartercar, 2-cylinder; driver, A. W. Mall.
Jackson, 4-cylinder; driver, C. D. Paxson.

In the morning the 80-mile run to Ravenna and back, most of it in drenching rain, which made the confetti trail difficult to follow and often reduced traction to a vanishing point, was successfully undertaken by all but the four-cylinder Jackson.

After half an hour's control at the clubhouse an easterly run was made to Mentor and home, distance 58 miles, at an average of nearly 18 miles an hour, over very bad roads.

Only two cars, the Gaeth, driven by Paul Gaeth, and the four-cylinder Buick, handled by J. T. Trumbull, came up to the high standard of efficiency demanded by the contest committee. The Mora came in on time, broke no seals, and had no adjustments, but lost 25 points for an accidental stalling of the engine when endeavoring to pass other cars stuck on a bad piece of road.

No. 22 Cartercar lost 1 hour 18 minutes repairing a broken gasoline feed pipe. Its companion, No. 21, came in on time, but decided to change a bent front axle. The operation, performed under the eyes of the officials, occupied twenty-four minutes at the rate of five points per minute. The two-cylinder Buick strayed from the route—an easy matter in the heavy rain—dropped into a hole and broke a link in the driving chain. At 9 o'clock neither of the Jacksons had appeared, one being reported out with a seized bearing, the other struggling with an exceptionally bad tire.

Official announcement of scores has been deferred owing to the elaborate system of penalization. Breaking the seals entails a loss of 50 points each time, stopping the motor costs 25 points, adjustments are charged 5 points per minute, and cars have, in addition, a running schedule. Time lost on tires or putting on and taking off chains is allowed for. An account is being kept of gasoline and water used and will form a special table. Good work was done around the city by the Gaeth delivery wagon, driven by J. Blatt, as well as by the American truck under the care of Mr. Lurch.

A. L. A. M. DISCUSSES ALCOHOL AND TIRES.

Hartford, Conn., was selected as the place for the meeting of the Test Committee of the Mechanical Branch of the A. L. A. M. Denatured alcohol and tires were the subjects.

At the morning session, Irving Buck, the chemical expert of the United States Alcohol Company, delivered a lecture on the subject of alcohol and gasoline and submitted to the committee a report of the results of his experiments, which prove that alcohol may shortly be a factor in the propulsion of autos. Action was taken by the committee to assist in a more exhaustive study of alcohol as a fuel, and a specially equipped power plant is to be installed. The first experiments, however, will be conducted with the various carbureters now in use and which will be attached to a Thomas "40" motor, used for engine tests at the Hartford laboratory. At the conclusion of the chemical and efficiency tests on the motor, special vaporizers will be used and practical road tests given. The experiments so far have resulted in a reversal of opinion as to the starting properties of alcohol.

Part of the afternoon session was devoted to the subject of tires, and a very interesting demonstration was given of the new Dow tube—a non-deflation tube, which promises to eliminate many puncture evils. It has a double walled tube between the air chamber and shoe, which is filled with a plastic material with self-healing properties. When a tire is punctured and the object has been removed, the air pressure inside the tube immediately causes this plastic material (which is mixed with fiber) to flow through the opening from the inside. As soon as this flow begins, the hole is effectually and permanently sealed. To give the engineers a practical demonstration of the tube, the inventor and Secretary Clarkson made the run from New York. Before the start six punctures were made, the spike being withdrawn each time. Four nails were placed in the same shoe and left in during the entire run of 115 miles. In the presence of the engineers these nails were withdrawn, with practically no loss of air.

DRAGON TRANSCONTINENTAL TRIP IN PROGRESS

SAN FRANCISCO, Sept. 5.—The general run of excitement in automobile circles was punctuated yesterday by the departure of

DRAGON: LATEST TRANSCONTINENTAL CANDIDATE.

Charles D'Arcy, the head of D'Arcy, Scott Company, with a crew in a Dragon stock car to attempt to break L. L. Whitman's transcontinental Franklin record of 15 days 6 hours. The start was made on the 4 P.M. ferryboat for Oakland, where the car really took to the road. The time schedule on which the car will travel has been kept a secret. In fact, D'Arcy, having never tried such a long run, has no definite idea of the ability of himself and his crew as cross-country drivers, but, having great faith in his car, has felt that the record could be lowered. He has had very little to say of the trip, preferring to await results before making any statements. The route to be followed on the trip will be over the roads running as close as possible to the Central Pacific, Union Pacific and Chicago and Northwestern railroads. From Chicago they will follow the Lake Shore railroad to New York. Besides D'Arcy, there are T. Martenstein, Frank Sexton and Ben Turner.

RENO, NEV., Sept. 7.—The Dragon car engaged in a transcontinental trip to New York City met with an accident in the Sierra Nevada mountains. Descending a steep decline and to avoid going over an embankment, D'Arcy, the driver, ran the car into the rocks. The front axle and wheels were badly damaged, but repairs were accomplished and the car resumed its journey. At time of accident the Dragon was nine hours ahead of record.

SOME MYSTERIES OF THE CARBURETER

By CHARLES B. HAYWARD.

FROM a popular point of view there is nothing quite so mysterious about the operation of an automobile as the carbureter, and it must be conceded that its appearance and its functions are well caluculated to mystify the uninitiated. What manner of "works" might this odd-looking contraption of brass, that sometimes takes the form of a mortuary urn and at others bears close resemblance to a cooking utensil, conceal within its grotesque outline? Mind you, I am speaking of the man who has never seen a carbureter dissected, and there are hundreds who have driven cars for a season or more who have never participated in one of these interesting seances. But there are in addition many hundreds, doubtless, who have viewed one of these mysteries reduced to its elements without being very greatly the wiser as to its construction or manner of working. Gasoline enters it by a most insignificant-looking tube, though nine out of ten of the gentry in question couldn't tell for the life of them how the gasoline does get into it. At the other end it leaves through a bulky outlet, totally disproportionate to that constituing its entrance. What magic process has it undergone in the interim?

For some reason or other automobile manufacturers have aided considerably in the shrouding of this essential of the car in mystery, and, strange to add, they are still doing it. Ask a representative maker, who does not buy his carbureters from a parts manufacturer, what type he is using, and nine chances to one he will reply "float-feet, automatic compensating," or something that means about as much either to the poorly-informed or to those thoroughly conversant with this branch of the art, for, with very few exceptions indeed, all carbureters are of the float-feed order and all are "automatic-compensating," or at least their creators would have intending users believe so. The automobile manufacturer exhibits a decided reluctance to revealing the "innards" of his carbureter in numerous instances, although both he and, in all probability, his inquirer is quite well aware that it embodies nothing whatever out of the ordinary.

Usually a Very Simple Device.

To get back to the man in the street's notion of what our Teutonic friends have very aptly termed the *vergasser*, a word that speaks for itself much more plainly than *carbureter*, it is hardly to be wondered at that so much ignorance and misconception should exist on this subject, any more than it should on that of ignition. Apart from a certain familiarity with its odor in a partly burnt state, and mixed with lubricating oil ditto, as it pollutes the atmosphere, the average man knows mighty little about gasoline, and usually cares less, until he comes to take upon himself the responsibility of owning a car. Compared to the amount of trouble of which it is capable, the carbureter appears to be a most inoffensively simple device, once its elements are understood, and the latter are so few and usually so well put together that the chances of their becoming deranged or of the contrivance as a whole causing trouble would appear to be remote indeed. Yet some of the best-known makers in the country have come to the conclusion that they cannot turn out as good a carbureter in their own works as they can buy from the special parts makers, so that if the manufacturer himself thinks fit to shift the burden to another's shoulders the novice can surely be pardoned some of his density where a clear insight into its working is in question.

In its way, the average carbureter is just as simple as it looks, and its operation is even simpler; but, like so many other *can-be-run-by-a-child* devices, the number of puzzling things that can go wrong with it is certainly amazing. It will play dead, buck, snort and pop, spit fire and perform many other tricks that are amusing and a bit terrifying to the spectator, but far more so to the man at the wheel, who has to descend to diagnose what is to him an ailment as queer as it is perplexing. It will sometimes run the engine by fits and starts, at others not at all, while there are all kinds of variations and cross harmonics on the scale represented by these two extremes. To sum it up briefly, somtimes it works and sometimes it doesn't, just as is the case with every other device. Ordinarily it is not a very difficult matter to diagnose its ills, once the beginner becomes sufficiently conversant with its mechanism and ways to be able to put cause and effect together and trace one to the other.

Backfiring a Puzzling Form of Trouble.

Of all the carburter troubles that have mystified the novices of each succeeding season, probably there is none that has proved so utterly puzzling, as well as alarming, as that of popping or backfiring. This mysterious ailment has a habit of appearing with an irregularity that is disconcerting, and which makes it appear as if it were not the outcome of any particular combination of circumstances, as would be the case were its presence only an accompaniment of certain visible and easily detected symptoms. But it comes and goes unexpectedly, at times reaching proportions that are alarming, particularly when flames shoot out of the air inlet of the carbureter, an occurance that gives the average driver visions of a conflagration and the smoking ruins of his car. It is difficult for him to understand why this fire should not ignite either the gasoline vapor or the gasoline itself that is in the carbureter at the time, and send the whole car up in flames. Simply because the former does not ignite readily, due to the fact that it is almost pure vapor with little or no air, and the flame passes over the latter at such a speed that it has not time to take fire. Even though the spray issuing from the jet should take fire, the flame could not travel back through the spray-nozzle to the float chamber, and it would be extinguished by the next inrush of air immediately following the backfire. The danger from the latter lies not so much in the fear of setting fire to the contents of the carbureter itself, as it does to something on the exterior and directly in the path of the flame. Bits of oil-soaked waste, the braid of the insulation on the ignition wiring and similar things burn readily, and the heat they produce will cause the gasoline supply to take fire also.

Causes of Some Common Ailments.

There are three things that may bring about this objectionable ailment on the part of the carbureter—improperly timed valves, a very weak mixture, or a very rich mixture. The first is most easily eliminated, as, if it be at the root of the trouble, the latter will be constant and not spasmodic, as it is with the mixture which varies greatly at differing speeds of the engine, despite the carbureter-makers' emphatic claims to the contrary. In either case the underlying cause is to be found in the fact that the inlet valve opens while the charge is still burning, both a weak and an over-rich mixture being very slow burning. The sustained pressure causes part of the cylinder contents to be ejected through this valve into the manifold and out through the air-inlet of the carbureter, even though the exhaust valve may be open at the same time. Ordinarily there is not more than sufficient pressure to cause the familiar popping noise, the issuance of flames from the carbureter being the symptoms of an exaggerated case of the malady, in which the mixture is so very slow-burning that it is still on fire not alone after the completion of the power stroke, but after its discharge into the air. The remedy is a change in the adjustment of the spray-nozzle to give more or less gasoline, according to the needs of the case, and the chief thing for the novice to learn in this particular is to make haste very slowly. The reason therefor will be apparent by giving the screw an eighth turn upward or the reverse and noting the marked effect on the running of the engine when the adjustment is very close to what

it should be. As this point recedes a correspondingly greater movement of the screw is necessary to produce a marked effect. To find the proper point the nozzle should be closed tightly, so that all adjustments may be made from a known standard. Then open half a turn, prime and try starting; if the motor will not start, try opening a slight bit more until this can be done. In nine cases out of ten the motor will run poorly when first getting under way. The needle should be screwed up or down as little as possible at a time, and a quarter to a half turn will be found to produce an apparent effect on the motor's running. It will either slow down and begin to get weaker or will speed up very appreciably, according as the adjustment approaches or recedes the point corresponding to the formation of the best mixture. While making these adjustments the throttle should be at the customary starting point, and after having got the motor to run satisfactorily under this condition it should be tried at all points of the throttle, from practically closed to wide open. If it fails to respond as readily at the higher speeds as it should, the trouble probably will be found to lie in the working of the auxiliary air-valve, which is a most prolific source of annoyance.

Proper Adjustment Is a Simple Matter.

Having found a point of adjustment of the spray-nozzle at which the motor performs satisfactorily at low speeds, it is wise to maintain it before going further by tightening the nut and also marking the point on the screw by a file-scratch for future reference, for many carbureter troubles are due solely to the vibration and hammering to which it is subjected by running over rough roads at high speeds. It is safe to say that carbureter troubles would be halved if it were undisturbed in this way, so that vibration is a prolific source of annoyance that can best be guarded against by a periodic inspection, the value of which will be greatly enhanced if there are guide marks to show the state of affairs at a glance. If the engine fails to show the same satisfactory results at higher speeds, and particularly if it fails to run at a high speed—*doesn't pick up when the throttle is opened,* to put it in the vernacular—the auxiliary air-inlet should be the next seat of operations. Hold this valve open and as a substitute for it place the hand over the auxiliary inlet, uncovering the latter gradually and in about the same proportion as the valve itself should uncover it as the throttle is progressively opened. Then the valve itself should be examined to detect any cause for its failure to respond to the varying speeds of the engine. These are most commonly dirt, too high a tension on the controlling spring, or sticking as the result of a violent bump.

A Most Prolific Source of Annoyance.

Volumes could really be written on the idiosyncrasies of the auxiliary air-valve, but the autoist who frets and fumes over its shortcomings to-day, cursing it as an invention of the evil one, should reflect on the condition in which his predecessor of a few years ago found himself before its invention, and if he wishes to enjoy a bit of actual retrospection of this kind he has only to fasten the auxiliary air-valve tight and run the car in that state. Even then his carbureter will work much better than did those of half a decade ago, because a great deal has been learned on the subject in the interim. An auxiliary valve is one of those delicately constituted pieces of mechanism that is a necessary evil under the present system of vaporizing the fuel, and, despite the extent to which it is maligned, the prospect of eliminating it in the near future does not appear overbright, so it is a case of make the best of it. To do this with the least annoyance it is only necessary to apply to it the same system of regular inspection that should be given every other part of the car at stated intervals. Follow the let-well-enough-alone principle of always refraining from disturbing an adjustment as long as it works properly; but this does not mean to overlook it entirely until it breaks down. Railroad companies pay out large sums of money annually for inspection crews, but, in spite of the vigilance exercised in a number of departments, locomotives often go wrong on the road. How then can the automobile be expected to be immune from the same trouble, when it is not looked after and gets so much harder service with far less care?

Most Troubles Are of the Ordinary Kind.

But to come back to the carbureter. Another chapter of ills is to be found under the category of fuel stoppages, and these may be found anywhere from the gasoline tank to the nozzle, so that they are not purely carbureter troubles. Lack of pressure in pressure-controlled systems and lack of gasoline in any kind of a system may be passed over as not coming in any catalogue known to the trouble-man. Autoists are still held up on the road with empty gasoline tanks that it takes them some time to discover, but probably they never do it twice. Some cars are provided with special stop-cocks right at the line side of the tank, in order to permit of the removal of the piping without emptying the tank, and instances have been known where the failure to reopen this cock has occasioned no end of blasphemy. Then there is usually another cock on the line side of the carbureter. So much for those cases of inadvertently omitting to turn the fuel on at all. Then there are water and sediment as enemies of the autoist's peace of mind. Despite the greatest care employed in handling the fuel, the amount of water and sediment that there is in the quantity used in the course of a season is surprising, so that a periodic flushing of the tank and opening of the drain-cok, both in the latter and in the line and carbureter as well, will reveal the potential source of considerable trouble if permitted to accumulate overlong. All the foregoing may be summed up as *keep the tank full and keep it and the fuel system clean,* as it amounts to nothing more.

Some of the Usual Mechanical Defections.

Then there are the sundry mechanical derangements of the fuel-controlling devices in the carbureter itself. The float comes first in order, though it is practically immune from defections. If of the cork variety it may become loggy and sink to a very much lower level than that intended, in which case the most effective remedy is its prompt replacement. Or, again, it may lose its protective coating of shellac and begin to disintegrate, in which case there will arise the necessity of making an inspection of the spray-nozzle. It's spindle may become bent, and it requires but a slight amount of disalignment to prevent it from performing its functions properly. The habit of hammering on the priming pin that is so prevalent is conducive to this ailment; hitting the pin a punch with the thumb does not bring the gasoline into the float chamber any quicker, as a slight depression and holding down of the tickler will achieve the same result without risk of damage. Getting out of line will sometimes cause the float to bind on the sides of its enclosing chamber, or it will fail to operate the shut-off valve in the fuel line, for reasons arising out of the same cause. Between the float-chamber and the spray-nozzle is a passage of very small bore in a great many carbureters, and though the remainder of the device may apparently be perfectly free from obstructions, they may lodge here and be overlooked. Then last, but far from least, is the spray-nozzle itself. Here of all places is one of the things that should be let alone unless there is positive demand for its adjustment, and when the latter is necessary it is a very bad habit to screw the needle up tightly, as it is apt to enlarge the orifice in the brass nozzle. These are the majority of the principal forms of trouble that will be encountered with the carbureter, though they may appear in so many diverse forms as hardly to be recognizable from the printed description. The number of different forms in which these various ills may make their appearance is legion, while matters are further complicated by the fact that it is difficult to always diagnose them properly, and they are furthermore frequently confused with defections arising from some fault totally foreign to the carbureter. The most common case of this kind is to be found in attributing loss of power to the carbureter, instead of a weak ignition current or poor trembler adjustment.

EFFECTS OF WIND RESISTANCE ON SPEED

By JOSEPH A. MACKLE.

LONDON, Sept. 2.—In these days of big covered cars the resistance caused by windage at high speeds is a matter of great importance, and yet one on which but little reliable information is obtainable. True it is that the R. A. C. hill-climb formula takes into account the power absorbed in overcoming this resistance, but the values assumed are more or less arbitrary and seem to favor unduly the smaller vehicles.

Recognizing the need of reliable data, the enterprising S. F. Edge conducted some interesting experiments at Brooklands track last week. A standard 40-horsepower six-cylinder Napier, without body, was equipped with a pair of well-stayed uprights, standing some eight feet high above the frame. To these stays were fastened horizontal laths, each six feet long by two inches in width, and by varying the number and position of these laths different areas were presented to the wind. Fortunately for the accuracy of these few experiments, the slight breeze blew straight across the track, so that there was no opposing head wind. The runs were made over a measured quarter mile on the finishing straight, and the assistance of the R. A. C.'s official time-keeper was invoked to insure accuracy.

On the first run of the series shown in the table below an area of 30 square feet was exposed (in addition to the normal amount of about 112 square feet for car and driver), the maximum speed attained was 47¾ miles an hour. On subsequent runs the area was gradually reduced by amounts of two square feet, and the speed increased step by step till, when the last lath had been removed and the normal surface presented to the wind, a speed of 79 miles an hour was recorded. The seventeenth run had an area of 15 feet square feet, formed by a gridiron arrangements of laths. The time recorded was 15 4-5 seconds, or a speed of 57 miles per hour, showing that owing to the extra skin and corner friction the resistance was the same as if 18 square feet of continuous area had been displayed. This fact is of much interest in demonstrating the speed-reducing effect of a number of small projections on a car. For the final test a total area of 24 square feet was exposed in two sections, the top portion having 13 square feet surface and being separated from the lower 11-square-foot portion by a gap of 6 square feet. The actual effect on the speed was equal to that offered by nearly 28 feet of continuous surface. It will be noted in going through the table that the lowest speed, recorded with the maximum resistance, was 47.85 miles per hour, while the highest speed was 79 miles per hour, a variation of 31 miles per hour merely by the additional wind resistance and with practically no increase in weight. Owners of large limousines, or touring cars with wind shields, must realize the enormous amount of extra work imposed on their engines, and also on their driving tires, particularly when traveling against a head wind.

These experiments deal, of course, with plane surfaces only, and many interesting tests would suggest themselves for determining in similar manner the best shape for front and rear of a fast car. Without doubt, too, the results so obtained would be of great value in their application to the dust-raising question.

The following gives the speeds attained on the various runs:

Run	Area of Screen	Time Over Flying 1-4 Mile	Speed
1	30 square feet	18 4-5 secs.	47.85 miles per hour
2	28 " "	18 "	50 " " "
3	26 " "	17 "	52.9 " " "
4	24 " "	16 "	56.2 " " "
5	22 " "	16 3-5 "	54 " " "
6	20 " "	16 1-5 "	55.5 " " "
7	18 " "	15 4-5 "	57 " " "
8	16 " "	15 3-5 "	57.6 " " "
9	14 " "	15 "	60 " " "
10	12 " "	14 2-5 "	62.5 " " "
11	10 " "	14 "	64.2 " " "
12	8 " "	13 3-5 "	66.2 " " "
13	6 " "	12 4-5 "	70.25 " " "
14	4 " "	12 "	75 " " "
15	2 " "	12 1-5 "	73.8 " " "
16	Normal	11 2-5 "	79 " " "
17	15 square feet Arranged as grid-iron.	15 4-5 "	57 " " "
18	24 square feet In two blocks with 6 square feet between.	17 3-5 "	51.1 " " "

REGISTER OF CYLINDER TEMPERATURES AND PRESSURES*

IN order to arrive at the amount of heat transmitted to the cylinder walls of an internal-combustion motor, in figuring its thermal efficiency, calculations are usually resorted to in which the temperature of the exploding gases and the specific heats of the gases of combustion are taken as the principal factors; but the extremes to which the former reach have not been accurately established. To ascertain this result more accurately, Professor Bertram Hopkinson, of the University of Cambridge, has devised an apparatus which permits of the measurement of this quantity of heat experimentally. The device, which was the object of a communication to the Royal Society in January last, is composed of a cylinder, 30 centimeters in diameter and 30 centimeters long, lined with wood and closed at each end with plates of cork. The principle upon which the apparatus is based is the variation of the electrical resistance of copper as a function of its temperature, and for this purpose the cylinder contains a spiral band of copper 6.5 mm. long, the turns of which are spaced 1 mm. apart. The spiral is extended at each end by straight strips, as shown in the illustration (Fig. 2), these extensions being for the purpose of connecting it electrically with the remainder of the apparatus.

The cylinder itself, which is shown sectionally in Fig. 1, has an opening at each end, the left-hand one (*A*) being for the insertion of a spark plug or ignitor, which reaches to the center of the cylinder, while the other (*B*) communicates with a pressure indicator. The other openings (*O*) permit the passage of the electrical connections of the spiral already referred to, the admission of the explosive mixture and its exhaust being accomplished by means of stop-cocks, which do not appear in the illustration. The mixture having been admitted and fired, the consequent rise in temperature produced causes a corresponding change in the resistance of the copper spiral, which is measured by means of the arrangement outlined in Fig. 2. The part of the circuit at the left comprises a battery (*B1*), consisting of 5 storage cells, a group of 4 incandescent lamps, wired in series-multiple (*L*), acting as a resistance, and the copper spiral already described. The other half of the circuit at the right consists of a galvanometer (*G*) and a resistance (*R*) of 0.25 Ohm, while connected in shunt with it is a second resistance (*R1*) and a battery (*B2*) of 6 cells,

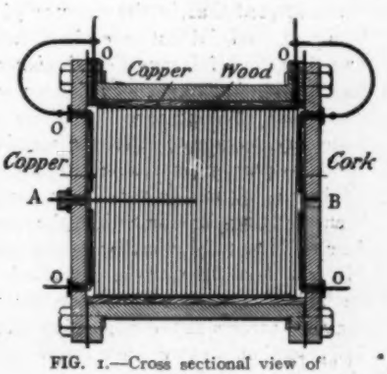


FIG. 1.—Cross sectional view of cylinder.

*Translated from *La Vie Automobile* by Charles B. Hayward.

it should be. As this point recedes a correspondingly greater movement of the screw is necessary to produce a marked effect. To find the proper point the nozzle should be closed tightly, so that all adjustments may be made from a known standard. Then open half a turn, prime and try starting; if the motor will not start, try opening a slight bit more until this can be done. In nine cases out of ten the motor will run poorly when first getting under way. The needle should be screwed up or down as little as possible at a time, and a quarter to a half turn will be found to produce an apparent effect on the motor's running. It will either slow down and begin to get weaker or will speed up very appreciably, according as the adjustment approaches or recedes the point corresponding to the formation of the best mixture. While making these adjustments the throttle should be at the customary starting point, and after having got the motor to run satisfactorily under this condition it should be tried at all points of the throttle, from practically closed to wide open. If it fails to respond as readily at the higher speeds as it should, the trouble probably will be found to lie in the working of the auxiliary air-valve, which is a most prolific source of annoyance.

Proper Adjustment Is a Simple Matter.

Having found a point of adjustment of the spray-nozzle at which the motor performs satisfactorily at low speeds, it is wise to maintain it before going further by tightening the nut and also marking the point on the screw by a file-scratch for future reference, for many carbureter troubles are due solely to the vibration and hammering to which it is subjected by running over rough roads at high speeds. It is safe to say that carbureter troubles would be halved if it were undisturbed in this way, so that vibration is a prolific source of annoyance that can best be guarded against by a periodic inspection, the value of which will be greatly enhanced if there are guide marks to show the state of affairs at a glance. If the engine fails to show the same satisfactory results at higher speeds, and particularly if it fails to run at a high speed—*doesn't pick up when the throttle is opened,* to put it in the vernacular—the auxiliary air-inlet should be the next seat of operations. Hold this valve open and as a substitute for it place the hand over the auxiliary inlet, uncovering the latter gradually and in about the same proportion as the valve itself should uncover it as the throttle is progressively opened. Then the valve itself should be examined to detect any cause for its failure to respond to the varying speeds of the engine. These are most commonly dirt, too high a tension on the controlling spring, or sticking as the result of a violent bump.

A Most Prolific Source of Annoyance.

Volumes could really be written on the idiosyncrasies of the auxiliary air-valve, but the autoist who frets and fumes over its shortcomings to-day, cursing it as an invention of the evil one, should reflect on the condition in which his predecessor of a few years ago found himself before its invention, and if he wishes to enjoy a bit of actual retrospection of this kind he has only to fasten the auxiliary air-valve tight and run the car in that state. Even then his carbureter will work much better than did those of half a decade ago, because a great deal has been learned on the subject in the interim. An auxiliary valve is one of those delicately constituted pieces of mechanism that is a necessary evil under the present system of vaporizing the fuel, and, despite the extent to which it is maligned, the prospect of eliminating it in the near future does not appear overbright, so it is a case of make the best of it. To do this with the least annoyance it is only necessary to apply to it the same system of regular inspection that should be given every other part of the car at stated intervals. Follow the let-well-enough-alone principle of always refraining from disturbing an adjustment as long as it works properly; but this does not mean to overlook it entirely until it breaks down. Railroad companies pay out large sums of money annually for inspection crews, but, in spite of the vigilance exercised in a number of departments, locomotives often go wrong on the road. How then can the automobile be expected to be immune from the same trouble, when it is not looked after and gets so much harder service with far less care?

Most Troubles Are of the Ordinary Kind.

But to come back to the carbureter. Another chapter of ills is to be found under the category of fuel stoppages, and these may be found anywhere from the gasoline tank to the nozzle, so that they are not purely carbureter troubles. Lack of pressure in pressure-controlled systems and lack of gasoline in any kind of a system may be passed over as not coming in any catalogue known to the trouble-man. Autoists are still held up on the road with empty gasoline tanks that it takes them some time to discover, but probably they never do it twice. Some cars are provided with special stop-cocks right at the line side of the tank, in order to permit of the removal of the piping without emptying the tank, and instances have been known where the failure to reopen this cock has occasioned no end of blasphemy. Then there is usually another cock on the line side of the carbureter. So much for those cases of inadvertently omitting to turn the fuel on at all. Then there are water and sediment as enemies of the autoist's peace of mind. Despite the greatest care employed in handling the fuel, the amount of water and sediment that there is in the quantity used in the course of a season is surprising, so that a periodic flushing of the tank and opening of the drain-cok, both in the latter and in the line and carbureter as well, will reveal the potential source of considerable trouble if permitted to accumulate overlong. All the foregoing may be summed up as *keep the tank full and keep it and the fuel system clean,* as it amounts to nothing more.

Some of the Usual Mechanical Defections.

Then there are the sundry mechanical derangements of the fuel-controlling devices in the carbureter itself. The float comes first in order, though it is practically immune from defections. If of the cork variety it may become loggy and sink to a very much lower level than that intended, in which case the most effective remedy is its prompt replacement. Or, again, it may lose its protective coating of shellac and begin to disintegrate, in which case there will arise the necessity of making an inspection of the spray-nozzle. It's spindle may become bent, and it requires but a slight amount of disalignment to prevent it from performing its functions properly. The habit of hammering on the priming pin that is so prevalent is conducive to this ailment; hitting the pin a punch with the thumb does not bring the gasoline into the float chamber any quicker, as a slight depression and holding down of the tickler will achieve the same result without risk of damage. Getting out of line will sometimes cause the float to bind on the sides of its enclosing chamber, or it will fail to operate the shut-off valve in the fuel line, for reasons arising out of the same cause. Between the float-chamber and the spray-nozzle is a passage of very small bore in a great many carbureters, and though the remainder of the device may apparently be perfectly free from obstructions, they may lodge here and be overlooked. Then last, but far from least, is the spray-nozzle itself. Here of all places is one of the things that should be let alone unless there is positive demand for its adjustment, and when the latter is necessary it is a very bad habit to screw the needle up tightly, as it is apt to enlarge the orifice in the brass nozzle. These are the majority of the principal forms of trouble that will be encountered with the carbureter, though they may appear in so many diverse forms as hardly to be recognizable from the printed description. The number of different forms in which these various ills may make their appearance is legion, while matters are further complicated by the fact that it is difficult to always diagnose them properly, and they are furthermore frequently confused with defections arising from some fault totally foreign to the carbureter. The most common case of this kind is to be found in attributing loss of power to the carbureter, instead of a weak ignition current or poor trembler adjustment.

EFFECTS OF WIND RESISTANCE ON SPEED

By JOSEPH A. MACKLE.

LONDON, Sept. 2.—In these days of big covered cars the resistance caused by windage at high speeds is a matter of great importance, and yet one on which but little reliable information is obtainable. True it is that the R. A. C. hill-climb formula takes into account the power absorbed in overcoming this resistance, but the values assumed are more or less arbitrary and seem to favor unduly the smaller vehicles.

Recognizing the need of reliable data, the enterprising S. F. Edge conducted some interesting experiments at Brooklands track last week. A standard 40-horsepower six-cylinder Napier, without body, was equipped with a pair of well-stayed uprights, standing some eight feet high above the frame. To these stays were fastened horizontal laths, each six feet long by two inches in width, and by varying the number and position of these laths different areas were presented to the wind. Fortunately for the accuracy of these few experiments, the slight breeze blew straight across the track, so that there was no opposing head wind. The runs were made over a measured quarter mile on the finishing straight, and the assistance of the R. A. C.'s official time-keeper was invoked to insure accuracy.

On the first run of the series shown in the table below an area of 30 square feet was exposed (in addition to the normal amount of about 112 square feet for car and driver), the maximum speed attained was 47¾ miles an hour. On subsequent runs the area was gradually reduced by amounts of two square feet, and the speed increased step by step till, when the last lath had been removed and the normal surface presented to the wind, a speed of 79 miles an hour was recorded. The seventeenth run had an area of 15 feet square feet, formed by a gridiron arrangements of laths. The time recorded was 15 4-5 seconds, or a speed of 57 miles per hour, showing that owing to the extra skin and corner friction the resistance was the same as if 18 square feet of continuous area had been displayed. This fact is of much interest in demonstrating the speed-reducing effect of a number of small projections on a car. For the final test a total area of 24 square feet was exposed in two sections, the top portion having 13 square feet surface and being separated from the lower 11-square-foot portion by a gap of 6 square feet. The actual effect on the speed was equal to that offered by nearly 28 feet of continuous surface. It will be noted in going through the table that the lowest speed, recorded with the maximum resistance, was 47.85 miles per hour, while the highest speed was 79 miles per hour, a variation of 31 miles per hour merely by the additional wind resistance and with practically no increase in weight. Owners of large limousines, or touring cars with wind shields, must realize the enormous amount of extra work imposed on their engines, and also on their driving tires, particularly when traveling against a head wind.

These experiments deal, of course, with plane surfaces only, and many interesting tests would suggest themselves for determining in similar manner the best shape for front and rear of a fast car. Without doubt, too, the results so obtained would be of great value in their application to the dust-raising question.

The following gives the speeds attained on the various runs:

Run	Area of Screen	Time Over Flying 1-4 Mile	Speed
1	30 square feet	18 4-5 secs.	47.85 miles per hour
2	28 " "	18 "	50 " " "
3	26 " "	17 "	52.9 " " "
4	24 " "	16 "	56.2 " " "
5	22 " "	16 3-5 "	54 " " "
6	20 " "	16 1-5 "	55.5 " " "
7	18 " "	15 4-5 "	57 " " "
8	16 " "	15 3-5 "	57.6 " " "
9	14 " "	15 "	60 " " "
10	12 " "	14 2-5 "	62.5 " " "
11	10 " "	14 "	64.2 " " "
12	8 " "	13 3-5 "	66.2 " " "
13	6 " "	12 4-5 "	70.25 " " "
14	4 " "	12 "	75 " " "
15	2 " "	12 1-5 "	73.8 " " "
16	Normal	11 2-5 "	79 " " "
17	15 square feet Arranged as grid-iron.	15 4-5 "	57 " " "
18	24 square feet In two blocks with 6 square feet between.	17 3-5 "	51.1 " " "

REGISTER OF CYLINDER TEMPERATURES AND PRESSURES*

IN order to arrive at the amount of heat transmitted to the cylinder walls of an internal-combustion motor, in figuring its thermal efficiency, calculations are usually resorted to in which the temperature of the exploding gases and the specific heats of the gases of combustion are taken as the principal factors; but the extremes to which the former reach have not been accurately established. To ascertain this result more accurately, Professor Bertram Hopkinson, of the University of Cambridge, has devised an apparatus which permits of the measurement of this quantity of heat experimentally. The device, which was the object of a communication to the Royal Society in January last, is composed of a cylinder, 30 centimeters in diameter and 30 centimeters long, lined with wood and closed at each end with plates of cork. The principle upon which the apparatus is based is the variation of the electrical resistance of copper as a function of its temperature, and for this purpose the cylinder contains a spiral band of copper 6.5 mm. long, the turns of which are spaced 1 mm. apart. The spiral is extended at each end by straight strips, as shown in the illustration (Fig. 2), these extensions being for the purpose of connecting it electrically with the remainder of the apparatus.

The cylinder itself, which is shown sectionally in Fig. 1, has an opening at each end, the left-hand one (*A*) being for the insertion of a spark plug or ignitor, which reaches to the center of the cylinder, while the other (*B*) communicates with a pressure indicator. The other openings (*O*) permit the passage of the electrical connections of the spiral already referred to, the admission of the explosive mixture and its exhaust being accomplished by means of stop-cocks, which do not appear in the illustration. The mixture having been admitted and fired, the consequent rise in temperature produced causes a corresponding change in the resistance of the copper spiral, which is measured by means of the arrangement outlined in Fig. 2. The part of the circuit at the left comprises a battery (*B1*), consisting of 5 storage cells, a group of 4 incandescent lamps, wired in series-multiple (*L*), acting as a resistance, and the copper spiral already described. The other half of the circuit at the right consists of a galvanometer (*G*) and a resistance (*R*) of 0.25 Ohm, while connected in shunt with it is a second resistance (*R1*) and a battery (*B2*) of 6 cells,

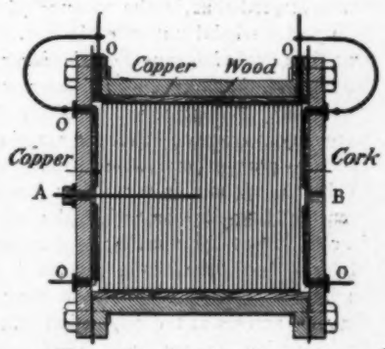


FIG. 1.—Cross sectional view of cylinder.

*Translated from *La Vie Automobile* by Charles B. Hayward.

which opposes the first battery mentioned. The number of lamps in the resistance *L* is such that the amount of current passing is eight amperes, while the resistance *R1* permits no current to pass through the galvanometer. Under these conditions, the resistance

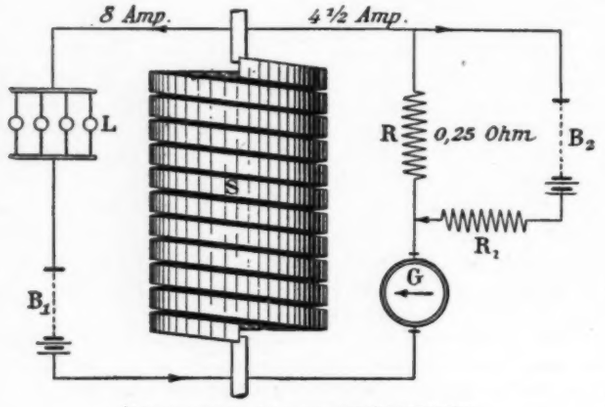


FIG. 2.—Electrical circuits of the apparatus.

of the galvanometer being 3.2 Ohms and that of the copper spiral (*S*) 0.14 Ohm, the current furnished by the battery (*B2*) is 4.5 amperes.

When the explosion takes place the heat produced increases the resistance of the copper spiral to such a slight extent, as compared with the total resistance of the circuit in which it is placed, that the intensity of the current traversing it practically does not vary. On the contrary, the electromotive force within the limits of *S* is augmented proportionately to its increase in resistance, so that a current which is proportional at that moment to the increase in resistance traverses the galvanometer *G*. The variation of the resistance of copper as a function of its temperature being known, is suffices to measure the deflection of the needle of the galvanometer to arrive at the variations of temperature of the spiral and, in consequence, the amount of heat absorbed by it, its specific heat at these diverse temperatures having been determined in advance. The reading is taken photographically with the aid of a mirror, which concentrates the luminous ray and throws it on a sensitized plate. The pressures reached within the cylinder are shown by the gauge attached to the opening *B*, Fig. 1, and, for the purpose of comparison, are recorded photographically at the same time as the deflection of the needle.

WHAT IS THE CAUSE OF RUST?

A short time ago Mr. Moody, by means of a series of experiments, of which the Central Technical College may well be proud, demonstrated that in the absence of carbonic dioxide rusting of iron and steel did not take place, and thus confirmed a view that was then doubtful, says *The Engineer* (London). The text books had taught that oxygen and water were alone sufficient to cause corrosion. It was proved definitely that more was required than water and oxygen to effect the reaction—an important step. Now another theory, remarkable in many ways, attracts attention. Dr. Cushman, of the United States Department of Agriculture, has been studying for some time the corrosion of wire for farmers' fences, and at the meeting of the American Society for Testing Materials on June 22 he described the investigations on which he had been engaged, and the facts he had discovered. From these he arrives at the conclusion that rusting is not a pure chemical reaction, as we have been taught to consider it, but an electrolytic or electro-chemical one. We have become used to the thought that most chemistry is in some way or another electric. The theory does not, therefore, sound unfamiliar, and we are able to follow Dr. Cushman when he tells us that, according to his view, the first attack on iron is not made by oxygen, even in the presence of water, but by hydrogen in the form of the hydrogen ion. A remarkable feature about this theory is that it is practically the same as that of the corrosion of alloys, which Mr. Rhodin outlines. Electrolytic action as the cause of the wasting of steel, commercial iron, and other alloys is no new thing, but it is carried a stage further by the introduction of modern theories of dissociation. He (Dr. Cushman) has found that in powerful oxidizing agents like bichromate of potash and chromic acid a valuable material for this purpose exists. Solutions of these salts prevent rusting by "polarizing the iron to the condition of an oxygen electrode," which wards off the attacks of the hydrogen ion. Moreover, steel dipped in such a solution retains its power of resisting electro-chemical action for some time, and since solution is the first step towards the formation of rust, rusting does not take place. How far it may be possible to adopt such a method for the protection of iron and steel structures remains to be seen, and on account of its simplicity it will certainly undergo plenty of tests. Mr. Rhodin adopts a different method, and, by an ingenious system of reasoning, arrives at a bronze alloy which is very slightly corrosible. He effects this without robbing the alloy of high physical properties. If such an end may be reached with an alloy of copper and zinc, may it not also be attained in alloys of carbon and iron? We already know that all steels do not equally well resist rusting, and it requires comparatively little effort of the imagination to think of brands more resistant than any we yet have. With Mr. Cushman's theory before us, and Mr. Rhodin's process for arriving at "balanced alloys," are we wrong in expecting the future to provide a non-corrodible steel?

ENGLISH WORRIED OVER GASOLINE PRICES.

The time was, and not so very long ago, when the question of petrol consumption was not a serious one, says the *Motor*. This was when we could buy a two-gallon can for 40 cents. To-day 60 cents a two-gallon can is the standard retail price throughout London, and anything between this and 72 cents is asked in the country. That it will advance yet a few pence higher is at least within the bounds of possibility, and it seems to me that any amount of grumbling or protest is not going to avail much. It is simply a case of being compelled to pay the price if one must have the petrol. Grumbling or protesting doesn't make the monopolists turn a hair; in fact, they rather like it as proof of their being indispensable to the motorist. And this is the position of affairs after the endless talk, discussion and study of what is termed "the fuel problem." The motorist is in a worse position to-day than he was in before the subject was broached. The question is, when is anything definite and practical to arise from such discussion? Why could it not be shown conclusively whether benzol is a thoroughly practical alternative? The results of the official long-distance test under observation of what this spirit could do would be worth reams of the academic discussion. I know for a fact that this spirit can be sold retail at 20 cents per gallon, and it certainly seems to be the only reasonable alternative. Let the petrol people once feel the pinch of vigorous competition and the inflated prices will come down with a rush, but as long as a monopoly closely controls the supply of generally used fuel little or no relief is to be anticipated.

The bucking and snorting refusal to start of the gas engine is, states *Power and Transmission*, often due to moisture in the cylinder, preventing regular ignition till dried by the heat of several explosions. The difficulty may be obviated by shutting off the cooling water a few minutes before starting of the engine and not turning it on again until after the engine begins to explode regularly when again started. The hint contained here may be of use to the autoist who has trouble of this nature in cold weather, as with the customary method of bringing the motor to a stop, that of opening the throttle wide and cutting off the ignition after it has run at speed for a few seconds, the cylinders next to fire are left full of gasoline vapor and air, which condenses when the cylinder walls get thoroughly cold and deposits no little moisture.

LETTERS INTERESTING AND INSTRUCTIVE

SOME QUERIES CONCERNING MOTORCYCLES.

Editor THE AUTOMOBILE:

[889.]—I would like to have you answer some questions about motorcycles, as I intend to buy one. I wish it to pull up almost any hill without pedaling and be able to run thirty to thirty-five miles an hour on the level. Will a 2 1-4 or a 2 1-2-horsepower, single-cylinder machine do this? Will a 3-horsepower or over cool successfully? Which kind of a drive gives the best satisfaction, the V-shaped belt, the flat belt, or the chain drive? Is slipping common with belt drives? I should think they would stretch and would not hold while out in the rain. Will a motorcycle tire last a season, if not, how long is the average life of such a tire? Is a motorcycle as expensive to maintain as a runabout? Is the non-vibrator coil successful, and would not a vibrator coil be much better? Why are they not used? Are there any motorcycle magazines published, and if so, will you kindly give me the necessary addresses? A SUBSCRIBER.

Flemingsburg, Ky.

A two to three horsepower single-cylinder machine will probably suit your requirements best. In good running order, it will mount the majority of hills without recourse to pedaling, and is altogether the most economical motorcycle both to buy and to maintain. There is no difficulty in cooling larger motors, as motorcycles of five to seven horsepower are common, and racing machines have been built several times as large as this. The question as to which form of drive is superior is one that still remains very largely a matter of personal opinion. As you have doubtless noticed, machines of both kinds are made in this country, and both seem to run well, though on the whole it must be conceded that the chain is a far more durable device. The number of kinds of belts employed, particularly abroad, where this form of drive is very common, is very great, most of the modifications being designed to overcome the fault of slipping, so that this would appear to be the chief defect.

Whether a motorcycle tire will last a season or not depends entirely upon the service it gives and the care that it gets, though under ordinary circumstances it would hardly seem possible to wear out a tire in the course of an average season's riding, barring accidents.

We have no idea what the average life of a motorcycle tire is, but as many automobile tires, which bear several times the weight and are subjected to much harder service in every way, are good for anywhere from five to ten thousand miles, we should think a motorcycle tire ought to do double this. The expense of maintaining a motorcycle is far less than that of keeping even the smallest of runabouts. The non-vibrator coil has been found to be the most successful, owing to the rapidity of its action as well as its freedom from trouble. Vibrator coils are not used owing to the fact that running over rough roads would soon cause derangement of the contact-making device. *The Bicycling World*, New York, is, to our knowledge, the only paper published in this country dealing with the motorcycle.

EXPERIENCES WITH SOLID TIRES WANTED.

Editor THE AUTOMOBILE:

[890.]—I am a subscriber to "The Automobile," and desire to obtain all the information possible regarding the subject of solid tires. I have a light runabout, and am thinking of equipping it with solid tires. Can you give me any suggestions that will enable me to get the best? C. N. PATTY.

Pontiac, Ill.

Not having had any extended personal experience with solid tires in this role, we do not feel compentent to answer your inquiry in exactly the form it is made. The question involves the weight of your car, roads to be traveled and other data, which you do not supply. Moreover, it is very largely a matter of personal experience, some autoists praising the use of solid tires, while others condemn them utterly, so we think it will probably be wise to ask any autoists who have tackled the problem to let us hear from them.

SOME QUESTIONS ON VARIOUS TOPICS.

Editor THE AUTOMOBILE:

[891.]—How many cubic feet of gas will a gallon of gasoline produce if properly mixed for an automobile engine? Also, how can I obtain the names of different garage owners throughout the country? Would it be of any advantage to take up the matter of a muffler cut-out and transmission which occupy one-half to one-third the space at present necessary for transmissions? It can be very easily operated by a lever on the steering wheel. I am considering this from a financial point of viw. N. J. G.

Grand Rapids, Mich.

By gas we presume you mean mixture, and not pure gasoline vapor. There is some data extant on the subject that is not at hand at the moment, but to answer such a question difinitely the specific gravity of the fuel, temperature and the like must be known. With the gasoline ordinarily used in automobiles the proportion of air is generally about 8 or 10 to 1, but actually the increment added by the introduction of the gasoline vapor is said to be so small that the number of cubic feet of air used by an engine in burning a gallon of gasoline would probably give an approximately correct answer to your query. Given the cylinder capacity, this could be easily calculated by multiplying it by the number of power strokes in the time required to burn a gallon of gasoline, though this would make no allowance for throttling or small charges. At ordinary temperatures, a gallon of gasoline of the specific gravity generally used nowadays in automobiles will probably produce from 70 to 90 cubic feet of vapor, and eight to ten times an average figure, such as 80 cubic feet, will doubtless give a fairly accurate result.

The best way for you to procure the names of garage owners throughout the country will be to obtain a copy of the Official Automobile Blue Book. Regarding the inventions you mention, if the devices in question are superior to those now generally in use it would certainly be to your advantage to have them placed on the market; but as to the method of doing this, we can hardly be of much assistance to you, other than to advise you to submit them to various automobile manufacturers and get their opinions.

ADVICE ABOUT ENTERING THE AUTO BUSINESS.

Editor THE AUTOMOBILE:

[892.]—I am anxious to enter the automobile business and would like a little advice upon the subject. I am at present working in a general store, but am mechanically inclined and believe the automobile business is a great field for the right kind of a young man. I would like to learn repairing and driving and later obtain an agency or enter the employ of some company as salesman. I am twenty-three years old and have had five years' business experience after a high school education. I have been a reader of "The Automobile" for some time and would appreciate any information you can give me. H. H. WOOD.

Enfield, Ill.

To learn repairing and driving, which seem to be the stepping-stone to further advancement in the automobile business, it will be necessary to enter the employ of some manufacturer, garage or dealer. While, as you say, the automobile business is a promising field for the right kind of young man, the advisability of entering it is something which you must decide for yourself; but if you are inclined that way, you will doubtless make no mistake in taking it up.

INCREASING THE POWER OF A "ONE-LUNGER."

Editor THE AUTOMOBILE:

[893.]—Will you please let me know, through the Letters Interesting and Instructive column of "The Automobile," if the gasoline engine in an Olds runabout, having a 4 1-2-inch bore by 6-inch stroke, can be made more powerful, and to what extent. To do this, should the inlet and exhaust valves be made larger, and how much? Also, how much lift should the valves be given? Or would it be preferable to decrease the amount of space between the piston and cylinder head, which now amounts to one and one-eighth inches? If

so, how much should this space be lessened, and should the plate be put on the piston or on the cylinder head? H. X. MELIN.

Galva, Ill.

It is possible to make such an engine produce a slightly greater output than that for which it was originally designed by increasing the initial compression. The easiest way to do this will be to fasten the plate to the cylinder head, thus reducing the clearance. It would not do to attach such a plate to the piston, as it would destroy the balance of the engine. It will be unnecessary to alter either the size or lift of the valves, as compressing the same volume that they are designed to admit and exhaust to a much higher degree will give the desired result, with a minimum of complication. Probably it would not be advisable to decrease the clearance by more than 25 per cent., or approximately 5-16 inch, as this will doubtless give the maximum benefit to be obtained from such a change without unduly cutting down the factor of safety of the remaining parts of the engine. Only a brake test will serve to show how much the power of the engine has been increased.

INSTALLING GAS ENGINE ON STEAM RUNABOUT.

Editor THE AUTOMOBILE:

[894.]—I would like to know if it would be possible to install an internal combustion motor in the body of a 1903 Locomobile runabout, and what would be the necessary expense of doing so?

Corydon, Ia. J. T. ROGERS.

It would be quite possible, but the job would be somewhat akin to building a new coat around an old button, and the result would be far from satisfactory. A light, air-cooled motor might be installed and made to run the combination, but it would neither be a thing of beauty nor a joy forever. As to the expense, there is no telling what this would amount to; but doubtless it would be far cheaper in the end to throw the old chassis on the scrap heap and buy a new car.

INFORMATION FROM HAWAIIAN ISLANDS WANTED

Editor THE AUTOMOBILE:

[895.]—Can you give me any information regarding the automobile business in the Hawaiian Islands? If so, your favor will be greatly appreciated, as I am an expert rubber man, can do anything with rubber, and am thinking of going to the Islands. I use a combination of rubber, cement, and treatments that are known to me only; in other words, I have perfected the vulcanizing proposition, and I want to get in a country where there is the most money—you understand how a fellow feels when he has got a good game. I have been employed by the Nevada Mobile Transit Company for more than a year. My work has been pronounced standard by representatives from every rubber company in the United States. Here in Goldfield during the summer months the heat is something fierce. Yet I have yet to have the first job to go bad. My work has held up on trips through Death Valley when the heat was registered from 140 to 160 degrees in the shade. I have seen new tubes and old tubes blow out a yard long, but never has one of my patches been affected from the heat. If you care to mention me in your magazine, and desire me to do so, I can furnish you with samples of my work to back up my assertion that I am at the top of the ladder in my profession. It has occurred to me that Honolulu ought to be a great town for my line of work on account of the extreme heat. I am a reader of your magazine, and if you can give me some advice in regard to that country and the addresses of the automobile companies there, I would greatly appreciate your favor; also any information regarding Mexico, Cuba, or South America will be gladly received.

Goldfield, Nev. LEE A. CRAW.

LONG-DISTANCE TOURING UNDER DIFFICULTIES.

Editor THE AUTOMOBILE:

[896.]—My father, brother and myself have just completed a 2,500-mile tour through the east, taking in Boston and New York, and as we did something of a stunt on the part of the trip between Youngstown, O., and Toledo, I thought it might be of general interest. I was driving a 1906, 40-horsepower Pope-Toledo, and when we left Youngstown on Thursday, August 29, at 7:30 a. m., our transmission was practically gone; that is, we had nothing but the high speed, the first, second and reverse all being out of commission. We arrived in Toledo the same evening, having completed the trip of 194 1-2 miles on the high gear alone. As you perhaps know, if you have ever been over these roads, there are lots of steep and rough hills, especially between Youngstown and Cleveland, to say nothing of the sand between Cleveland and Toledo. When I started up the hill just across the river from Chagrin Falls, I thought we were done, for I never expected to see the top. We made it, however, and I knew then that the car was capable of getting through to Toledo. It was pretty rough work, nevertheless, for we could not stop on the bumps at the bottom.

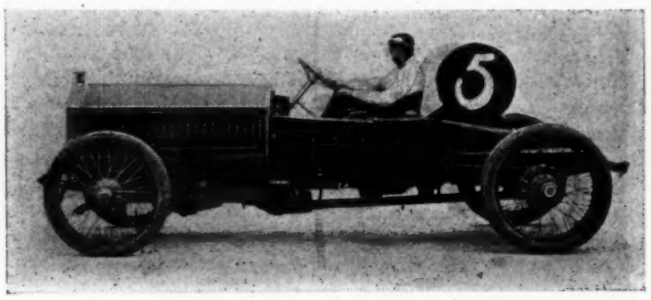
Chicago, Ill. HORACE B. HORTON.

NEW WAY OF NUMBERING IN TRACK RACES.

Editor THE AUTOMOBILE:

[897.]—No doubt you are aware that the Brooklands Automobile Club has issued greatly improved regulations for the races to be held September 14 and henceforth on the Brooklands track. A new rule to be enacted is in regard to the method of identifying cars, and the regulations state that a disc shall be provided for each competitor's car, two feet in diameter, and that a number shall be painted upon it.

I enclose you a photograph of a six-cylinder Napier with the disc attached, as arranged by Mr. Napier, which may prove interesting to your readers, and which, I think, you will agree with me in saying it will be a splendid method of identification, and enable the spectators to easily identify each individual car. I find by experiment that the numbers can be plainly distinguished from all parts, even the highest point on the course, i. e., furthest away from the track. The Brooklands people are to be congratulated on inaugurating this simple and neat form of distinguishing the cars, without in any way detracting from their speed.



HOW THE NUMBERS LOOK WHEN APPLIED TO THE CAR.

London, England. S. F. EDGE.

REMEDY FOR A GREASY RADIATOR.

[898.]—I am enclosing my subscription for one year. I have read with much interest your up-to-date journal, and as I have not seen in its pages the following remedy for greasy radiators, I am sending it along for your approval. I had a very greasy honeycomb radiator, and tried to clean it with hot water and caustic soda, but did not succeed. I then tried the following: One gallon of naphtha poured into the empty radiator, and shook it up and down. Cleaned it all out in two minutes. Of course I had to detach the radiator to do so. It is a most effective cure.

Oatlands, Tasmania. T. C. BUTTON.

SOME INFORMATION ABOUT ACETONE.

Editor THE AUTOMOBILE:

[899.]—If your correspondent in the August 22 issue—Letter No. 866—will write me, I will be pleased to give him particulars about acetone and gas storage tanks. For your information, would say that the greatest use of acetone is in the manufacture of high explosive smokeless powder. Thousands of barrels are sent yearly to England and Japan from the United States. Less than 2 per cent. of the production is used for dissolving acetylene gas. It is the greatest solvent of carbon known. P. C. AVERY.

Milwaukee, Wis.

THE GREASE THAT TRACY DID USE.

Editor THE AUTOMOBILE:

[900,]—We desire to call your attention to page 334 of last week's issue of "The Automobile," in which you print an inquiry from C. L. Weimer, of Lebanon, Pa., asking what stuff Tracy used in his Locomobile racer in the 1905 Vanderbilt Cup Race. Your footnote in reply to this inquiry, is incorrect. Tracy used Havemeyer Gear Compound, which fact we advertised in your paper at the time, and it was to this very advertisement that your correspondent refers in his inquiry. Mr. Tracy also gave us a letter at the time, stating that he used our compound and that the same was most satisfactory. HAVOLINE OIL COMPANY.

New York City.

Gasolene Taxicab Brigade Has Reached New York

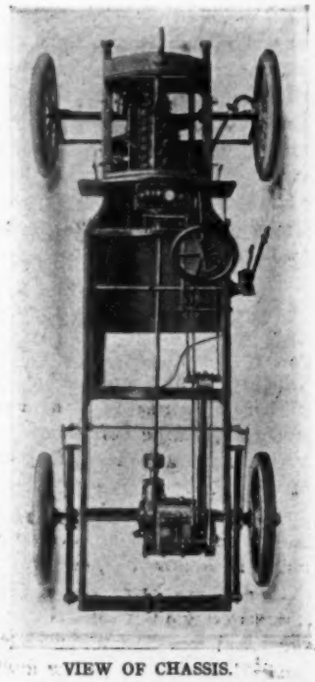
FIRST OF THE 600 DARRACQ TAXICABS FOR NEW YORKERS' USE.

IN the competition to supply New York with an efficient fleet of gasoline taximeter cabs, plying for hire at a reasonable figure, Darracq has been victorious. Associated with the French constructor—for the pioneer firm on the banks of the Seine limits its activities to automobile building—is the New York Taxicab Company, with offices at 546 Fifth avenue, and with a temporary garage at 40 West Sixtieth street, near Broadway. The officials of the company announce that thirty-five cabs will be on the streets of New York by the end of the month, and that additions will be made at the rate of sixty per month. Before the end of the winter 300 cabs will be in service, and by next spring the number will have reached 600. Rates of travel by the taximeter will be 30 cents for the first half mile and 10 cents for every additional quarter mile, in any district. Traveling further uptown than 125th street, and not returning, will entail an additional fixed charge; there will also be a supplementary charge for crossing any of the ferries. Waiting time will be at the rate of $1 per hour.

Two types of gasoline cab have been constructed by the Darracq Company, one with a two-cylinder motor, the other equipped with a four-cylinder engine. For cities possessing well-paved streets, without difficult grades, the former model should be sufficiently powerful; for New York the more powerful car was considered preferable. Starting after some of the French firms, the Darracq engineers recognized that an automobile for rough cab work must be built on entirely different lines from the pleasure vehicle; thus their existing models were put to one side and new vehicles designed. Nearly eighteen months ago we saw the first cab in the hands of the testers; to-day the new factory adjoining the old works is in full operation, turning out 3,000 cabs the first year, and having a contract for 2,000 chassis annually for ten years with one large syndicate.

The four-cylinder motor in one casting has cylinders 85 by 100 bore and stroke, horsepower rating being given as 14-16. Valves, mechanically operated, are all on one side, and ignition is by high-tension Simms-Bosch magneto. A winged tube radiator-forming tank is used, with belt-driven fan and gear-driven centrifugal pump.

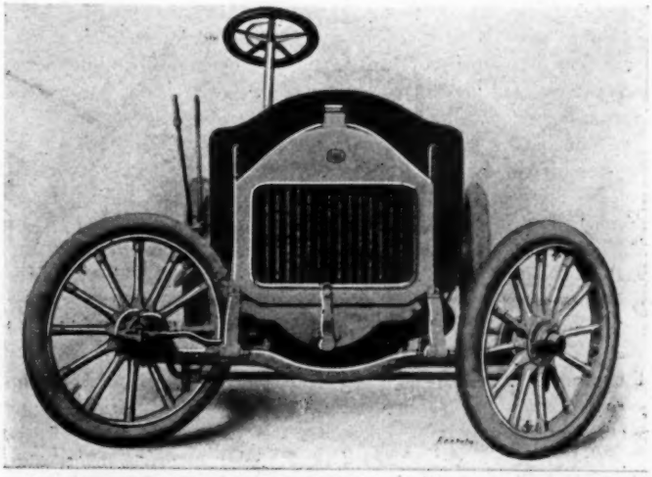
Combined with robustness, interchangeability and accessibility have been sought in the new cab. If the motor needs attention, it can be dismounted in a few minutes merely by removing four bolts. In the same way the removal of four spring clamps allows the rear axle and gear box to be taken down. Instead of being suspended from the frame, the gear box is carried with the differential on a fixed rear axle, the driving shafts transmitting power only, and not bearing any of the weight of the vehicle. There are three forward speeds, the third having direct drive, and one reverse. Large-size ball-bearings are employed in the rear axle and transmission, and gears are made exceptionally large for this size of car in order to ensure length of service. Placed on the rear axle, it is claimed that less noise is heard from revolving and changing of gears than in any other position.



VIEW OF CHASSIS.

In crowded traffic the Darracq cabs are exceedingly handy; the frame is narrowed forward to allow a wide steering angle, the turning radius being about 22 feet. Control is by means of throttle on the steering wheel and by a foot accelerator. Nothing is carried on the dash but the sight-feed lubricator. Gears are operated by a side lever, with a gate-type quadrant.

A landaulet body, constructed in Paris by the Carrosserie Industrielle, has been adopted, it allowing the vehicle to be either open or closed at pleasure. The taximeter, also of French construction, is carried on the left-hand side of the driver, where it is visible to both chauffeur and passengers. Instead of carrying spare tires, each machine will be equipped with a Stepney spare wheel, a British invention recently introduced to the United States. Gaulois tires are used on the cabs already arrived in New York, but it is declared that the Goodrich will be employed exclusively on the later vehicles. A school will shortly be opened to train the 500 drivers already enrolled on the company's books.



REVERSE NEVER NEEDED FOR TURNING IN STREETS.

FORECAST OF 1908 FRENCH MODELS

By GEORGES DUPUY.

PARIS, Sept. 2.—Interesting changes are being effected on the 1908 chassis, to be exhibited at the Grand Palais on November 12. There is a general tendency towards the chain, the cardan shaft having lost many of its admirers. In fact, it has been generally demonstrated on our European roads that the "non-suspended weight," the straining upon the differential gears (whenever there is a difference of level between the two traction wheels), the instability of the rear part of the car at high speed, and, above all, the wear upon the tires, are strong factors against the popularity of the shaft-drive. The small-town service chassis excepted—taximeters or light delivery vans—the European manufacturers will now equip almost all their models with the good old chain. A chain case of leather or aluminum will also be seen on every fashionable "voiture" in 1908.

Renualt Freres have totally changed their transmission. Instead of the patented lateral switching of the gears which they have used successfully for the past four years—that is, the lateral displacement of the two gear shafts in the box—they are now building a double sliding (triple with that of the reverse) like every common mortal. This will be just as silent as the old system, of course. They also do away with that big drop oiler on the dashboard. The drop-tubes alone are visible, while the oil tank is hidden under the bonnet. Lastly, their racer-like runabout—equipped with the ordinary 35-45 motor—seems to have conquered the favor of refined automobilists here, although I could name a few American runabouts much more comfortable.

The Panhard firm, old and venerable, has decided to wake up and do something. They have designed a motor with cylinders cast in pairs, fitted with a new Nilmelior magneto. They keep their armored wood frame, as in the past. De Dietrich will, next season, inaugurate the direct drive and a new tubular radiator.

Gobron has placed on the market a beautiful six-cylinder chassis of 60-100-horsepower, and a four-cylinder 15-horsepower for cab use, chain driven. The Gobron motor, as is well known, has a "double compensed" motion—that is to say, an explosion chamber at the top and at the bottom of each piston, so that the crankshaft works without any straining or deformation on its bearings, while the whole system gives the motor a perfect balance at all speeds. Bayard-Clément will exhibit a very interesting little 4-cylinder car, 14-20-horsepower, selling at $1,300 complete, with four-seat double phaeton or the regular runabout body; Simms-Bosch magneto.

Simms-Bosch firm has just patented a new system of ignition, consisting of a magnetic ruptor fitted on the high-tension plug in the explosion chamber. This system suppresses entirely the high-tension distributor, as well as the ordinary low-tension ruptors, always so difficult to regulate. The camshaft, of course, acts directly on the new magnetic ruptors.

That transverse spring at the rear of the chassis, which is used on the Peerless in America, the Darracq, the Brouhot, the Pilain, the Delahaye and many others in France, and was abandoned by Renault last year, is likely to disappear, at least on the powerful cars. It gives a too considerable rocking motion to the heavy closed bodies, say the experts. C. G. V., Delahaye, Mors, Peugeot, Brasier, Delaunay-Belleville, Darracq, Mercedes, Hotchkiss, Leon Bollie, Fiat and other Italians will not add or modify anything of importance next year.

The "monobloc" motor—four cylinders in one casting—of which the C. G. V. firm is the pioneer, is gaining popularity. Almost all the "voiturette" builders are now adopting it on their chassis. This type is shorter, somewhat lighter, and gives a better cooling with less expense in the casting. The best "six" on the European market is now advertised by Napier, Bollée, Gobron, Itala, Fraignac, Mercedes, Hotchkiss, Brasier, Fiat and Darracq.

Multiple disc clutches have come to stay almost everywhere. They will be seen on a large number of chassis at the Salon. The old cone clutch has lived long enough. The Italians have adopted exclusively the Hele-Shaw pattern, with some times as many as twenty-six pairs of discs. Many French constructors are now placing the gasoline tank under the front seats, having realized the great difficulty of keeping a regular feed—on rough and uneven roads—with the actually prevailing system of exhaust pressure, hand pumps and "nurses." Finally, the detachable rim for touring purposes has not yet seen its best days here. A provision of "ready tires" constitutes a considerable weight to the load of the car, but seems likely to continue in vogue for some time yet.

RECORD SPACE TOO SMALL FOR SALON.

PARIS, Sept. 2.—Entries for the decennial automobile salon, which will fling open its doors on November 12, were finally closed on August 15. The Paris municipality having generously given up a large portion of the Esplanade des Invalides for the erection of a huge temporary hall to supplement the Grand Palais, it was believed that for once every exhibitor could be alloted the maximum amount of space. Gustave Rives, the general manager, has to announce, however, that the cutting down process will again be indulged in, even the two big halls on the left and right banks of the River Seine being insufficient to accommodate all those asking for space. From a glance over the lists, American manufacturers do not appear to have been attracted by the decennial celebration. The few firms having agencies in France—they are still only a few—will be present as usual. Some lamp manufacturers and makers of accessories will exhibit, either directly or through agents. The only American display of any note, however, will be in the machinery section, where various types of machine tools will be shown in motion. Nearly a dozen leading American machine tool manufacturers have agents in Europe, who will show side by side with French and German houses.

During the Salon a competition will be held in the machinery hall for motor-driven electricity-producing plants, using low-grade coal gas. Silver and bronze medals are offered for competition by the *Poids Lourd*, in addition to numerous prizes offered by the executive committee.

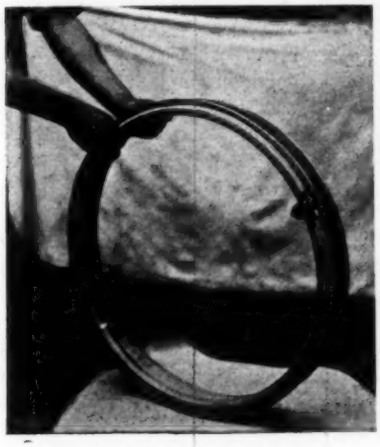
BREAKDOWN COMPETITION FOR CHAUFFEURS.

PARIS, Sept. 2.—Automobile mechanics are naturally men of resource, never non-plussed by breakdowns or refusals of the motor to perform the duties for which it was called into the world. At a smoker or any social gathering their skill in diagnosing and remedying the ills of the gasoline inspiring machine has been known to develop in a fantastic manner. To know what a mechanic can do under mundane conditions, when a silent, stubborn, responseless automobile is at his feet, a Parisian automobile journal has proposed a breakdown competition.

At one of the big automobile factories encircling Paris or on the quiet road around Longchamps race-course, where cyclists develop their form, the candidates for the expert mechanic diploma will be lined up in front of a row of machines, each one of which has the same secret malady. On the word of command each expert will rush to the machine reserved for him and endeavor to get it going in the shortest possible time. In one series the magnetos will be tampered with; in another clutches will need tender care; in a third the carbureters will have been specially disarranged; a fourth heat will test the ability of the men to change a number of burst tires. Thus tests will succeed one another until only the best men are left to compete in the finals. One dollar per head will be charged as entrance fee, in order to keep out the joyous individuals more anxious to obtain a half-day vacation from their employers than to compete in a competition. An official diploma will award the most skilled automobilists.

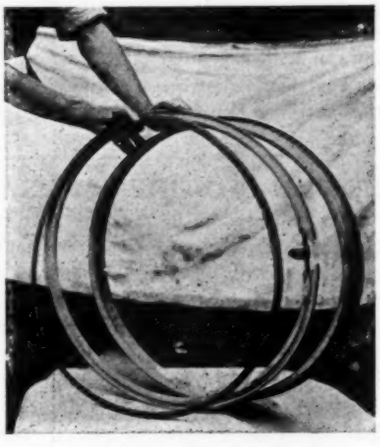
FEATURES OF NEW MIDGLEY RIM.

Attempts to solve the problem of providing a quicker and easier method of changing tires than the one in general use have not been lacking, though they have rarely met with considerable success, during the past few years. A new production of more than ordinary interest has been designed by Thomas Midgley, inventor of the Midgley universal rim, the Midgley tread and other automobile accessories, and has been placed on the market by the Hartford Rubber Works Company, of Hartford, Conn.



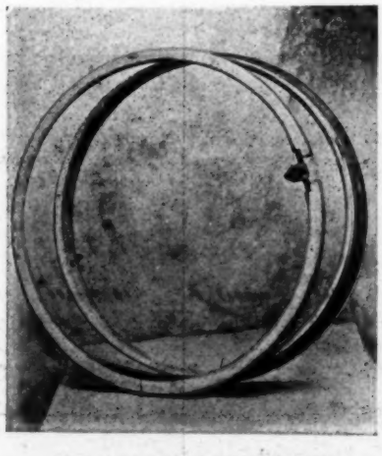
BEAD LOCKED IN POSITION.

The accompanying illustrations show the nature of the rim, which, it is declared, is truly universal, and can be used for any standard tire, either clincher or Dunlop. Previous attempts to produce a detachable bead have only been available for one type of tire. The new rim will supersede the Midgley universal rim, a former invention of Mr. Midgley and now widely used on automobiles. The turnbuckle feature, which has been a success on the former Midgley universal rim, is retained in the latest production. As shown by the pictures there is only one bead and one turnbuckle. When the rim is used for the Dunlop tire a strip of rubber, as shown in illustration, exactly fitting the clincher groove, is put in on the inner side and the bead is reversed. By taking out the band of rubber and by reversing the bead the rim takes any style of clincher tire.

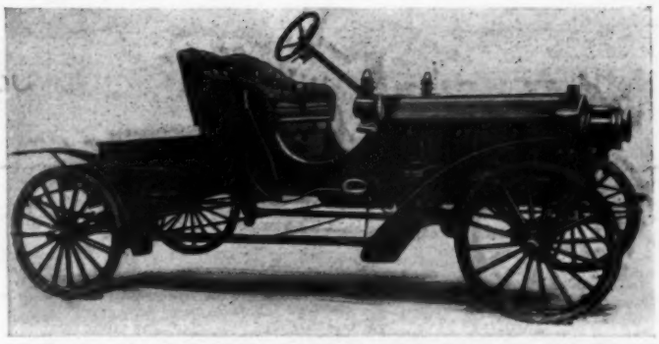


BAND FOR DUNLOP TIRES.

Lightness has been obtained on the new rim with sufficient strength to give every guarantee of safety. The rim can be used with or without lugs. The three illustrations depict the rim complete, with the detachable rim secured in position; in the second one the band of rubber allowing the rim to be used for a Dunlop tire is seen; and in the last cut the two parts are shown side by side. To put on a tire by this device calls for the minimum of labor; the shoe and air chamber are slipped over the smooth edge of the rim, the bead put on and secured by means of the turnbuckle.



THE TWO COMPONENT PARTS.

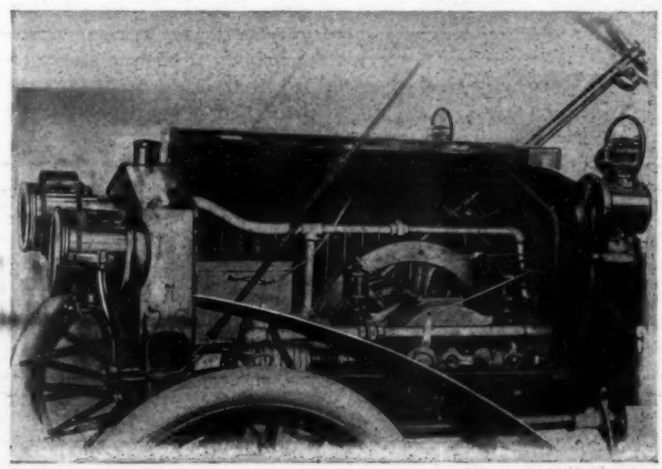


STANLEY GASOLINE RUNABOUT FROM MOORLAND, IND.

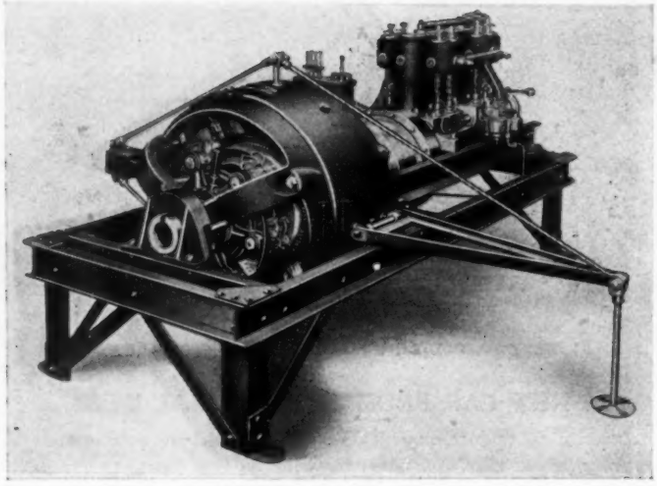
A NEW CAR FROM THE CENTRAL WEST.

Indiana is maintaining its reputation for the production of popular-priced cars, the latest to make its bow being the Stanley gasoline runabout, made by the Stanley Automobile Manufacturing Company, at Mooreland, Ind. The newcomer is designed as a general utility car at a low price, and combines many features of merit. While its makers have taken advantage of the simplicity of the horizontal opposed two-cylinder engine, they have shorn it of some of its ordinary shortcomings by placing it forward under the hood, though still retaining the longitudinal position with regard to the chassis. The cylinders measure 5 by 5½ inches bore and stroke respectively, and the motor is rated at 20-horsepower. All the valves are mechanically operated and the motor is water-cooled, the car as a whole giving no inkling of the unusual position of the motor, as will be evident from the photograph illustrating it complete. A force-feed oiler is employed for the lubrication, while the carbureter is of a standard type and the ignition is of the high-tension order, current being supplied by dry cells. This placing of the motor has been taken advantage of to render every one of its parts not alone easily accessible, but also removable from the chassis without the necessity of dismounting the motor itself from the latter.

The frame is of the standard channel-section pressed steel, measuring ¼x2x3 inches, and is supported on four-leaf full elliptic springs all round, measuring 36x1½ inches, the latter in turn being carried on 34-inch wheels, which are shod with solid tires of the same size. The wheelbase is 108 inches and the tread standard, while the weight all on is 1,410 pounds. The front axle is a single piece of 1¼-inch steel, while the rear axle consists of crucible steel castings and seamless tubing as a housing, the driving shaft being 2¼ inches in diameter. A planetary type of transmission is employed, giving two speeds forward and reverse, with a single chain-drive to the rear axle. Roller bearings are used throughout. The Stanley runabout complete lists at $900.



POWER PLANT OF THE 20-HORSEPOWER STANLEY CAR.



SPRAGUE ELECTRIC DYNAMOMETER WITH ENGINE COUPLED.

ELECTRIC DYNAMOMETERS FOR ENGINE TESTS.

The handling of an electric current offers such a convenient and accurate method of determining the power output of a motor on test, that the use of a generator and resistance for testing preparatory to installing the motors in the chassis has become very general with automobile manufacturers. As a rule, most of the apparatus employed has been of home manufacture and more or less crude, usually consisting of a direct-current generator and bank of lamps or a water rheostat to dispose of the current. To obtain more accurate results, electric dynamometers have begun to take the place of these outfits, and specially designed apparatus of this kind is now being placed on the market by the Sprague Electric Company, New York City. They consist of a specially constructed direct-current generator, with compensating poles, mounted on a bed adapted to carry the motor to be tested, the general arrangement of the apparatus being shown by the accompanying illustration. The field frame of the generator consists of a cylindrical magnet yoke, to the inner side of which the poles are bolted, each pole supporting a field coil. Brackets containing the bearings are bolted to the end of the yoke, the front bracket carrying the rocker arm. Special bosses are cast on the end brackets to receive ball-bearings, which support the entire generator in such a manner as to permit of the oscillation of the field frame concentric with the armature. The movement of the latter is limited by a stud on the outside of the yoke projecting through a slot in a forging secured to the side of the supporting frame. The length of the slot, therefore, determines the arc through which the field frame can move. A short and a long arm extend horizontally from opposite sides of the field frame, to which they are rigidly secured, the short arm carrying at its outer end a small box to receive the amount of lead necessary to counter-balance the field frame on its ball-bearings, while the long arm is provided with a hanger for slotted weights, similar to those employed on an ordinary platform scale.

The motor to be tested having been mounted on the bed and attached to the dynamometer through the flexible coupling, its output is measured by means of the torque exerted by the generator armature in its tendency to rotate the field in the same direction as it is turning. By means of the weights on the hanger already mentioned, the amount of this torque can be readily measured. The horsepower of the engine can then be determined by the aid of the following formula:

$$HP = \frac{W+2D+3.1416+S}{33{,}000}$$

in which W = weight in pounds on the end of the hanger; D = distance in feet from center of armature to weight, and S = speed of the engine in revolutions per minute during the test. It will be noted that in this formula the only variables with a given dynamometer are the weight W and the speed S, so that with the aid of a curve or tabulation showing the horsepower developed at different speeds, an ordinary mechanic can perform the tests without making any calculations.

BENJAMIN BRISCOE ON TRADE CONDITIONS.

"Recent events have caused some discussion as to the destiny of the automobile business," says Benjamin Briscoe, chairman of the committee of management of the A. M. C. M. A. "The tenor of this discussion has been, of course, influenced by the failure of two or three large concerns. These failures, in my estimation, mean nothing particularly as referring to the business as a whole.

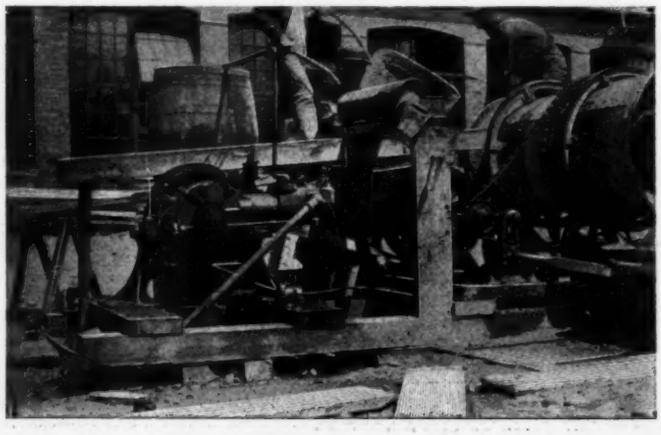
"Last winter, in an interview, I said that I believed certain concerns were bound to fail and I decried the entry of so many new concerns into the field, which had little capital and less experience.

"As to the failures that have taken place, one can put his finger on the exact cause, and it is certainly not occasioned by a lessening general demand. It is true that there have been several contributory causes such as the lateness of the season, caused by the cold weather during the spring, even up to June, the general tightness of the money market, but these are not the real causes, it seems to me, though they may have quickened the end.

"One great cause why some concerns seem to lack business is their misinterpreting the demand. To succeed, certain definite policies must be adopted and rigidly adhered to. The everlasting changing of models; the giving of options so that every car made is different from every other car that preceded it; the starting out with a popular priced car and equipping it with accessories that made it necessary to advance the price beyond its class, the putting on of unnecessary and expensive additions, as it were."

HOW AN OLD TIMER GIVES CONSTANT SERVICE.

The general presumption is that automobile engines require constant manual attention in the way of speed regulation and general control, particularly when working under varying loads, but the one here shown, which is used as a power unit for a concrete-mixing machine, seems to refute that theory effectively. The motor is one of the first of the single-cylinder Ramblers, and is fitted with the regular equipment standard at the time of its construction five years ago, both as to carbureter, lubricating and igniting systems. It is provided with an automatic spark controller, and it is said that with the throttle locked in position runs for hours under the varying loads to which it is subjected, without appreciable change of speed. While the power demanded is not excessive, when it is considered that the engine is exposed to all kinds of weather, and generally half covered with sand, mud and oil, it will be seen that the service exacted is of a decidedly strenuous nature.



HOW THE OLD RAMBLER ENGINE TURNS THE CONCRETE MIXER.

VILLE DE PARIS BEGINNING WORK AGAIN AFTER ITS ACCIDENT.

PARIS, Sept. 2.—In a boat-building yard in the eastern suburbs of Paris an aeroplane of much more than ordinary importance has been discovered under construction. Some time ago Captain Ferber, one of the leading authorities on aerial navigation, obtained a three years' leave of absence from the army to devote himself entirely to his favorite studies. In answer to all inquiries, the Captain replied that he was considering a new aeroplane, but had made little progress. Levavasseur, the maker of light-weight aeroplane motors, who was supposed to be in league with Captain Ferber, guarded off all inquiries in a similar manner.

Considerable progress, however, had been made with the new machine, work now being in such an advanced condition that flights may be expected this year. A 13-foot model, propelled by mechanical means, has made a series of flights, varying from 100 to 130 yards, with a wonderful display of stability.

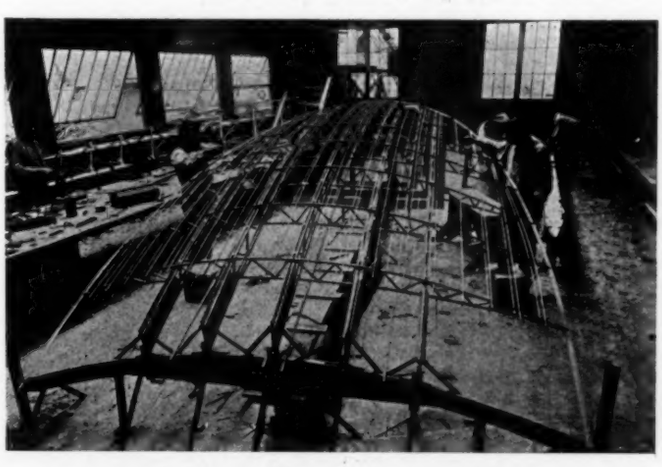
The Antoinette-Ferber aeroplane has few points of resemblance with the existing successful machines. Its main members are a long keel and a couple of lateral wings. Two rudders are carried in front, and driving power is obtained from a 100-horsepower Antoinette motor, operating a propeller 94 inches in diameter. The illustrations of the aeroplane under construction in the Lein workshop show originality in methods of building. After repeated experiments with skeletons of birds, an improved form of wing has been designed with a cylindrical surface, declared to be 50 per cent. more effective than plane bearing surfaces. There are no metal or rope stays, so common on all aeroplanes up to the present, the new machine being as clean cut as a bird. Ash is employed for the wings, joints being formed by aluminum sleeves and stays riveted with copper. Fully equipped with its 100-horsepower motor, its propeller and its pilot—who will be Captain Ferber himself—the aeroplane will weigh not more than 1,100 pounds. The 100-horsepower 16-cylinder motor, similar to the one used by Santos-Dumont, weighs exactly 100 kilos (220 pounds), or one kilogramme per horsepower. In 1902, when Levavasseur built his first aeroplane motor, the weight was two kilogrammes per horsepower. First experimental flights with the new machine will be made on the military drill-ground at Issy, near Paris.

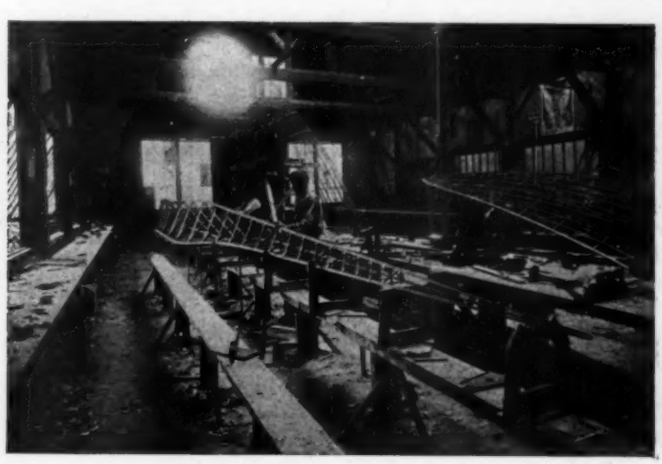
After several months absence for repairs, as the result of a collision with her shed, the *Ville de Paris*, steerable balloon, has once more come forth. Its appearance coincides with the temporary retirement of the *Patrie*, called in for lengthening and strengthening of the frame with a view to carrying a heavier load. The first run undertaken to familiarize the crew with the working of the balloon was a complete success. Starting from Sartrouville, the balloon made for the railroad station, then headed back for Maisons-Laffitte, touched Montesson and worked back to the starting point, answering its helm in a very satisfactory manner and proving thoroughly stable. On board were the owner, M. Henry Deutsch de la Meurthe, the designers, Surcouf and Kapferer, and a couple of engineers.

The *Ville de Paris* is 203 feet feet in length, 34 feet greatest diameter, and has at its rear eight cylindrical compensating tubes inflated with hydrogen, placed in pairs above, below and at each side of the rear portion. Its power plant consists of a 70-horsepower Argus motor, driving a propeller designed by the late Colonel Renard. There are two pairs of rudders, one of which is for altitude, the other for lateral movements. Inflexible military service has called M. Surcouf to the colors for several weeks, thus postponing further experiments. Immediately on his return, the balloon will recommence its daily tests.

TROPHY FOR AEROPLANE COMPETITION.

A trophy which should have considerable influence in developing the growing interest in aeronautics has been offered by the *Scientific American* for competition for heavier-than-air flying machines. In order that the competition might be held under the auspices of experts, the trophy has been given under a deed of gift to the Aero Club of America, to be competed for annually by both American and foreign inventors. The first competition will occur at the Jamestown Exposition, September 14, 1907, and will be for a flight of one kilometer (3,280 feet) in a straight





HOW THE LEVAVASSEUR-FERBER AEROPLANE IS BEING BUILT ON ORIGINAL LINES IN A FRENCH WORKSHOP

line. The rules for the competition have been drawn up by a committee of the Aero Club. The competition is to be progressive in character—that is to say, if the flight of the predetermined distance is accomplished this year, next year a longer flight will be required. In other words, the conditions of the yearly contests will be such that they will be just ahead of the art, in order to induce inventors continually to strive to improve and perfect their machines. After every competition the name of the winner will be inscribed on the trophy. If it is won three times in different years by any competitor, the trophy will become his personal property.

SCIENTIFIC AMERICAN FLYING MACHINE TROPHY.

This splendid example of the silversmith's art which is intended to foster a great invention—a machine that shall conquer the air—is of great beauty. From a handsome green onyx base with a silver cartouche rises the massive sterling silver trophy, measuring 32 inches over all. At the base are six winged horses of cast silver, at right and left in groups of threes, with a rider astride each middle horse raising aloft the palm of victory. With this concession to mythology (for Pegasus, the horse of the muses, has always been at the service of the poets), we again ascend through the swirling air until we come upon the globe. Here, projected away from the earth, we find an aeroplane plunging through the ethereal envelope. The machine is in high relief, standing away from the silver globe with its frame held together by silver guy ropes. Above, surmounting the globe, is the eagle—the American Eagle—holding the wreath of victory, an eloquent forecast of the success of an American inventor. The trophy is valued at $2,500 and its beauty at once brings to the lips the words: "Blue Ribbon of the Air." The contest will be watched with great interest.

LCOKING FOR A COURSE FOR GRAND PRIX.

The Automobile Club of France is in the market for a first-class racing circuit on which to hold the 1908 Grand Prix, and has sent broadcast a request for applications. Essential qualities are a length of not more than 62 miles, no railroad crossing, no large villages immediately on the course, but some large towns capable of serving as headquarters must be within easy reach. A course of 50 miles round would be preferred to one of 62 miles, but as the new regulations are likely to bring forth a large number of contestants, safety calls for the increased distance. Naturally, the Dieppe authorities will put in a plea for the continuance of the favor bestowed upon them this year—to be selected as the scene of the French international automobile race is the greatest honor a provincial municipal council has yet conceived—but it will not receive preferential treatment. It is a foregone conclusion that the district selected will be asked to hand over a few thousand francs to meet expenses, but there is not likely to be any difficulty, even in the sparsely populated districts, in raising the amount. Dieppe is suggested as a permanent course by many automobilists, who would prefer greater economy in the organization, and believe that by reason of its nearness to Paris this circuit would be an excellent ground for all kinds of competitions.

THE AUTOMOBILE CALENDAR.

AMERICAN.

Shows and Meetings.

Oct. 24-31.....—New York City, Grand Central Palace, Eighth Annual Automobile Show, Automobile Club of America and the American Motor Car Manufacturers' Association.
Nov. 2-9.....—New York City, Madison Square Garden, Eighth Annual Automobile Show, Association of Licensed Automobile Manufacturers.
Nov. 29-Dec. 6.—Chicago, Casino Garden, Second Annual Auto Parts Show. A. M. Andrews, secretary, 184 La Salle street.
Nov. 30-Dec. 7.—Chicago, Coliseum and First Regt. Armory, Eighth Annual National Automobile Show, and First Annual Commercial Vehicle Show, National Association of Automobile Manufacturers.
Dec. 14-21.....—St. Louis, Mo., New Coliseum, Second Annual Auto Show, St. Louis Automobile Manufacturers' and Dealers' Association.
Dec. 28-Jan. 4..—New York City, Madison Square Garden, Importers' Salon. C. R. Mabley, secretary and manager.
Feb. 20-Mar. 7.—New York City, Madison Square Garden, Fourteenth Annual Motor Boat and Sportsmen's Show.
April 6-11.....—Buffalo, Convention Hall, Motor Boat and Sportsman's Show. D. H. Lewis, manager.

Races, Hill-Climbs, Etc.

Sept. 14.....—Boston, Readville Track, Race Meet Bay State Automobile Association (postponed from September 2).
Sept. 14.....—Philadelphia, Point Breeze Track, Quaker City Motor Club.
Sept. 14.....—Jamestown (Va.) Exposition, Aeroplane Contest for "Scientific American" prize.
Sept. 14.....—Albany, N. Y., 95-mile Road Race, under the auspices of the Albany Automobile Club.
Sept. 21.....—St. Louis, First Annual Owners' Reliability Tour, Automobile Club of St. Louis.
Sept. 20-21.....—Milwaukee, Wis., State Fair Grounds Track, 24-hour Race, Milwaukee Automobile Club and Milwaukee Dealers' Association.
Sept. 21.....—Harrisburg, Pa., Middletown Track, Race Meet, Motor Club of Harrisburg.
Sept. 22-24.....—Newark, N. J., Olympic Park Track, Essex County Fair Automobile Races.
Sept. 24-25.....—Springfield, Mass., Good Roads and Legislative Convention, under auspices of Springfield Automobile Club.
Sept. 30-Oct. 5.—Trenton, N. J., Inter-State Fair Automobile Races, Includes 24-hour Event.
Oct. 21.....—St. Louis, Mo., International Aerial Race of the Gordon Bennett Prize, Aero Club of America.

FOREIGN.

Shows.

Aug. 1-Sept. 30.—Holland, Amsterdam, International Exhibition of Motors and Machines, Palace of Industry.
Sept. 28-Oct. 7..—Denmark, Copenhagen International Auto Show.
Nov. 11-23.....—London, Olympia Motor Show.
Nov. 12-Dec. 1..—Paris, Exposition Decenniale de l'Automobile, Grand Palais, Esplanade des Invalides, Automobile Club of France.
Dec. 5-22.....—Berlin, Germany, Automobile Show.
Jan. 18-Feb. 2..—Turin, Italy, Fifth International Automobile Exhibition, Palace of Fine Arts, Valentino Park, Automobile Club of Turin.

Races, Hill-Climbs, Etc.

Sept. 15.....—Austria, Semmering Hill Climb, Austrian Automobile Club.
Sept. 15.....—France, Chateau-Thierry Hill Climb.
Oct. 1-15.....—Paris, Electric Vehicle Competition, Automobile Club of France.
Oct. 20.....—France, Gaillon Hill Climb.
Nov. 1-15.....—France, Voiturette Contest near Paris.
May 16, 1908...—Sicily, Targo Florio, Automobile Club of Italy.
June 20-July 5, 1908.—Grand Prix, Dieppe Circuit, Automobile Club of France. (Exact date to be announced.)
July 14, 1908...—Paris to London, Aerial Race.

EARLY FALL HAPPENINGS AMONG THE CLUBS

SPLENDID AUTO PARADE IN THE BISON CITY.

BUFFALO, N. Y., Sept. 9.—No spectacle of Buffalo's Old Home Week excelled the automobile parade which was held the evening of Tuesday, September 3. Never before have the people of this city witnessed such a pageant of horseless vehicles. In point of beauty of illumination, harmony of color and extravagance of

E. R. THOMAS'S THOMAS FLYER THAT WON THE FIRST PRIZE.

decorative art, the automobile parade had everything beaten. It must have cost a lot of money to decorate some of the cars in that parade, and the owners spared nothing in their endeavor to capture the eyes of the three judges who awarded the prizes.

The competing cars lined up on the west side of Main street in front of the automobile club's rooms, and about eight o'clock pots of red fire announced the start of the procession, which slowly proceeded down Main street to the Terrace and countermarched to Luna Park, where the judging took place. As the cars entered the park they backed up in double rows, facing the packed grandstand. The judges, Wilfred P. Davidson, John D. Wells, and A. M. Sterling had to dive in and out of a moving throng in order to get a good scrutiny of the decorations. They had twenty-five prizes to award.

Secretary D. H. Lewis worked indefatigably for the success of the event. President W. H. Hotchkiss of the A. A. A. was a participant in the parade, but did not enter for the prize competition.

The E. R. Thomas heavy touring car was lavishly decorated, a huge centerpiece representing the American eagle on the wing and typifying the Thomas Flyer. Jesse B. Eccleston's Peerless was bedecked in silk, with numerous white doves holding ribbons in their bills. F. A. Babcock's electric touring car, second prize in its class, was trimmed in white, with countless electric bulbs of miniature size. The judges announced the following as prize winners:

Heavy Touring Cars—First, E. R. Thomas, Thomas Flyer; second, Jesse B. Eccleston, Peerless; third, Chauncey J. Hamlin; fourth, Mrs. John L. Clawson; fifth, Eugene Kulp; sixth, James L. Byers; seventh, F. B. Wells.

Light Touring Cars—First, Charles Schoenhut; second, F. A. Babcock, Babcock electric; third, J. L. Gress; fourth, D. H. Lewis; fifth, J. H. McNulty; sixth, G. H. Poppenberg, Rambler; seventh, W. O. Holmes; eighth, W. G. Ruddle; ninth, George F. Beck; tenth, Empire State Tire Company; eleventh, Seymour P. White.

Heavy Runabouts—First, Albert Poppenburg; second, Louis Block, Ford; third, Ralph Sidway.

Light Runabouts—First, Otto Hagelin; second, William Orell; third, Deschaum Automobile Company.

Special Prize—Captain J. B. Souter.

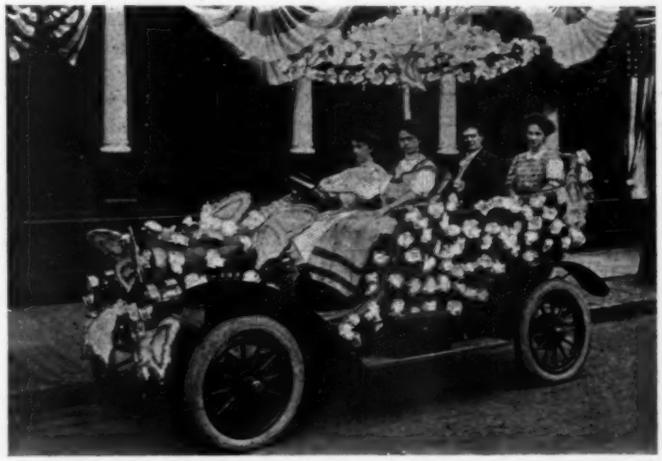
MONTANA'S FIRST AUTO CLUB FLOURISHES.

BUTTE CITY, MONT., Sept. 7.—Though but very recently organized, the Butte Automobile Association is already becoming extremely active and there is every prospect that within a short time it will constitute a body such as few cities of a similar size can boast of. Bruce Kreamer has been appointed attorney and the club will be duly incorporated under the laws of Montana. Until such time as the charter membership roll shall be closed, the initiation for members is to remain at $5 and that for associate members at $2.50, and the club has immediately made itself strong with all the powers that be by electing the mayor, members of the board of aldermen, the county commissioners and the newspaper men all associate members. The club now has 75 members and it is anticipated that this will be increased to 300 or more within the next 30 days, when the charter roll is to be closed.

The club will actively interest itself in everything calculated to advance the interests of automobiling and as a first step Messrs. Gillie, Carroll, Berkin and Rinckel were appointed a legislative committee, while as the result of a communication from the Chicago Automobile Club, requesting particulars of a route to Butte, President H. E. Harris suggested the appointment of a route bureau. The idea was acted upon favorably and a committee consisting of Walter Beck, Arthur Pierce, Creighton Leargey and Dr. Rinckel was appointed. The meeting was held in the rooms of the Stock Exchange and they will continue to be club headquarters until the organization has grown sufficiently to erect its own building.

AURORA CLUB TO HOLD AUTO CARNIVAL.

AURORA, ILL., Sept. 9.—The Aurora Automobile Club has decided to treat the inhabitants of this part of the State of Illinois to an automobile carnival, the like of which they have never seen before. It is scheduled for September 28 and plans are under way to make the celebration as complete as can possibly be done, every member of the special committee appointed at the meeting held last week having been allotted a special part of the work to superintend. So far as at present outlined, the affair is to be opened with an extended series of gymkhana events, for which



G. H. POPPENBERG'S RAMBLER, ALSO A BUFFALO WINNER.

numerous novel features hitherto untried are promised. There will also be speed races, and it is intended to have one of the well-known racing cracks in attendance as the drawing card of this part of the program. The members of the special committee appointed at the last meeting are: W. A. Legerman, D. W. Simpson, C. C. Hinckley, C. B. Phillips, Dr. E. J. Sill, R. H.

Colby, M. E. Woolf, W. F. Thorne, Frank Anderson, S. E. Miller, Otto Hammerlund, F. D. DeVier, J. J. Warne and E. A. Miley. Prizes will be offered in all events and as an inducement to outside autoists all those purchasing tickets to the value of $2.50 or more will be entitled to a club membership until the first of the coming year.

MOTOR-BOAT CARNIVAL ON THE HUDSON.

NEW YORK, N. Y., Sept. 10.—Beginning September 23 the race week of the Motor Boat Club of America, in which is included the National Motor Boat Carnival, will be held on the Hudson river, New York, and the program outlined promises a very interesting series of events. In order to make the interest more general a distinction has been made between purely racing craft and utility types, and there will be events for various classes from dinghys up. The events are open to all members of regularly organized yacht or motor boat clubs in this country or abroad, the races being governed by the rules of the Motor Boat Club of America.

The program of events for the week is as follows: Monday, September 23: Reliability trials. Tuesday morning, September 24: Mile speed trials against all existing world's records; afternoon, free for all race, also races for motor dinghys up. This is generally looked upon as ladies' day. Wednesday, September 25, Thursday, September 26, and Friday, September 27: Series races, all classes, in which are included the perpetual challenge trophies for the championships, as follows: International, national, interstate, motor yacht and cabin cruisers. Saturday morning, September 28: Long distance race, New York to Albany and return; afternoon, long distance from New York to Poughkeepsie and return. The former is intended for the larger type of high-speed boats, and the Poughkeepsie race more for the cruising type of boats.

OHIO VALLEY AUTO CLUB BANQUETS.

WHEELING, W. VA., Sept. 9.—The Ohio Valley Automobile Club, which has its headquarters in this city, is proving to be a most successful organization and is doing a great deal for the welfare of autoists and automobiling, besides having a good time of it in the process. Following closely upon its successful run to Coleraine, O., of a few weeks ago, the club gave a dinner at the Stone House, Roney's Point, W. Va., last Thursday evening, which under the able management of Secretary T. A. Westmyer proved a most enjoyable affair. The club has been very active in prosecuting its good roads campaign and is also taking considerable interest in road marking, besides which folders are issued giving the routes to important points from Wheeling, one of the latest to appear being that to Columbus, O., via Fairview, Zanesville, Jacksontown and Reynoldsburg over the old national pike. It also contains an injunction that is of value to every autoist passing that way: "Don't forget to register at the first toll-gate in Guernsey county, which is the last toll-gate on the pike, as otherwise double rates are charged."

VIRGINIA AUTOISTS FORM STATE ASSOCIATION.

RICHMOND, VA., Sept. 9.—In order to become eligible to membership in the American Automobile Association, as a State body, the Richmond Automobile Club has been succeeded by the Virginia Automobile Association, which has a charter membership of 45. The following officers were elected at a meeting held at the Richmond Hotel last week. President, Dr. R. Angus Nichols; vice-president, John B. Swartout; secretary and treasurer, Otis M. Alfriend. The president appointed committees to draft a constitution and by-laws as well as to carry out other necessary work to perfect the organization.

The purpose of the latter is to advance the interests of autoists generally and to endeavor to defeat proposed hostile legislation, as well as to effect the repeal of that now in force. It is expected that the 100 members necessary to complete the State organization will be enrolled within the next fortnight, as auto enthusiasm is increasing daily throughout the Old Dominion.

OQUAGA CUP TOUR STARTS SEPTEMBER 16.

BINGHAMTON, N. Y., Sept. 9.—Dates have been set for the Oquaga Cup tour for 1907, and start will be made from this city, September 16. Members of the Binghamton Automobile Club only are eligible to compete for the trophy, and entries will close September 14. The first leg of the tour is from Binghamton to Richfield Springs, N. Y., a distance of 98 miles, where the first night stop will be made. The second day's run will be 84 miles, from Richfield Springs to Syracuse, and the third day from Syracuse to Ithaca, a distance of about 130 miles. The final and fourth day's run will be from Ithaca to Binghamton, 56 miles. The Oquaga cup was the joint gift of W. G. Faatz and F. E. Barnes to the club, and was won last year by Ross M. Russell, who has donated it to the club to be contested for again.

BIG ENTRY FOR PHILADELPHIA'S 24-HOUR.

PHILADELPHIA, Sept. 9.—Next Saturday's meet of the Quaker City Motor Club will in all likelihood far outclass in importance all previous efforts of that hustling organization. The 100-mile event, the Keystone State championship, will see fully a dozen cars lined up, including two Frayer-Millers, Packard, Welch, Peerless, Oldsmobile, Stearns, Pullman, Pennsylvania and Thomas, with several possibilities to be heard from. The two 25-mile events—one for touring cars, the other for runabouts—also have filled well, and good weather is all that is needed to bring a record crowd to Point Breeze next Saturday.

FREEPORT, ILL., ORGANIZES AN AUTO CLUB.

FREEPORT, ILL., Sept. 9.—Organization of the Freeport Automobile Club has been effected here with a goodly number of local autoists as charter members. One of the features projected by the new organization is a race meet on the local track the latter part of September, the date for which will be made public in a few days.

SOME AUTO NEWS FROM GERMANY.

BERLIN, Sept. 1.—The two German officers, Graetz and von Roeder, accompanied by a chauffeur, started August 10 on their African tour from Dar-es-Salem to Swakopmund. They sent off a telegram to the King of the Belgians at their start, greeting him as the chief bearer of culture in Africa. This has caused some comment, as the Belgian rule in Africa can hardly be called a happy one.

The commercial car trials arranged for the autumn will be held during a period of six days from October 7 to 12 on the Berlin Magdeburg-Dessau-Jueterbog route. The entries closed on September 1, and are already numerous enough to insure the success of the contest.

It is pretty well assured that the German Autodrome will be laid out in the Eifel, as in spite of assertions to the contrary there is a very strong opposing body in Taunus. Several meetings have taken place at Aix-la-Chapelle, which would then be made the starting point.

His Majesty, the German Emperor, has bestowed the Order of the Prussian Crown, third class, upon Count Sierstorpff and Dr. Levin-Stoelping; of the fourth class upon Herr Engler, and the Order of the Red Eagle, fourth class, on Count Arco, Baron von Schrenck-Notzing, and Herr De La Croix, for their services in regard to motoring.

Neither Baron von Hewaldt nor Captain Hildebrandt intend going to St. Louis as Germany's representatives for the Aero Gordon-Bennett in October, according to present information.

MASSACHUSETTS RE-REGISTRATION SHOWS 9,257 AUTOS

BOSTON, Sept. 9.—Legislators and automobilists who expected to see every road in Massachusetts made into a fine macadamized and oiled highway with the proceeds of the automobile law passed this spring, assessing an annual fee of $5 upon every owner of an automobile, were very much surprised when they learned the result of the re-registration of automobiles, which has been in progress under the direction of the Highway Commission for the past five weeks or more. The most conservative estimated that the re-registration would yield at least $75,000 for road work, and there were plenty who expected that as much as $100,000 revenue might result. Even the Highway Commission prepared to re-register as many as 15,000 cars.

As a matter of fact, the re-registration, which is now practically completed, shows that there are now less than 10,000 cars in use in Massachusetts. The exact figures are 8,207 automobiles re-registered and 1,050 new certificates issued, making a total of 9,257 cars in use at the present time. This number seems very small when it is compared with the more than 23,000 sets of number plates that have been given out in the last four years. In addition to the automobiles, the commission has re-registered 478 motor cycles and 186 dealers or manufacturers, and the total income from re-registration is $44,781, which looks small indeed compared with the estimates that were made last winter when the law was under discussion at the State House. Added to this amount there is about $5,250 from new registration, but the total amount is only about $50,000, and the Highway Commission estimated that it would take that amount alone to make the necessary repairs of damage caused by automobilists to existing State roads. And the work of re-registration has cost over $5,000.

The principal cause of the shrinkage is thought to be that owners of cars have failed to obey the law, which requires that upon the transfer of ownership of a car the party selling it shall notify the Commission and have the certificate of registration cancelled. Applications for re-registration indicate that much more of this has been going on than the Commission suspected. Another cause of shrinkage is that each summer many cars from outside States are registered in Massachusetts. These cars are now in their home States as a rule and will not be re-registered until next summer. Some autoists have put their cars in storage rather than pay $5 now and another $5 for registration in 1908 on January 1, while there is no doubt that there are owners who are taking chances of being arrested and are planning to run their cars the rest of the fall without re-registering them. Some clubs have advised their members not to re-register their cars, on the ground that the law is unconstitutional. This attitude is bound to bring about a test if it is persisted in through the fall months.

A NEW JERSEY FINE AND A PENNSYLVANIA SENATOR

PHILADELPHIA, Sept. 9.—A fortnight ago, Justice of the Peace Carver, of Elwood, N. J., fined State Senator James P. McNichol, the political leader of this city, $13.30 for fracturing the speed ordinance of the State, rousing the Senator's ire, to put it mildly. Had McNichol not been in a hurry to reach the shore, he would have refused then and there to "pony up." But the constables had him and his machine, and to get away he had to pay. When he reached Atlantic City he lost no time in calling up his lawyers and instructing them to appeal to the Supreme Court. The appeal was heard by Justice Frenchard in Camden last week, and the Senator won his point, securing an order for the remittance of the fine. True, the victory was on a technicality over the irregular manner in which the complaint was made, there being no decision that the law had not been violated.

But the end is not yet. Justice Carver has carried his case to Motor Vehicle Commissioner Smith, and the latter, firmly believing from the testimony that McNichol and his chauffeur broke the laws, has ordered them to appear before him at Trenton next Friday to show cause why their licenses shall not be revoked. As New Jersey is the Senator's favorite stamping ground, and as those who know him say he will fight what he thinks an injustice to the last ditch, local automobilists are preparing for a hot legal battle at the Jersey capital. It has been the custom of the Motor Vehicle Department to revoke the licenses of those who fail to appear in answer to the Commissioner's summons, and if McNichol and his chauffeur do not show up next Friday their names will, in all probability, be stricken from the list of eligibles, and if afterward caught operating a car in Jersey they will be jailed.

Much interest is manifested in the outcome of the incident.

ANENT IMMUNITY FOR MEDICAL AUTOISTS.

INDIANAPOLIS, IND., Sept. 9.—At its next meeting the City Council will be asked to pass an ordinance allowing local physicians and surgeons to break the automobile speed laws in answering emergency runs. Such an ordinance was suggested by Police Judge Thomas Whallon recently when he discharged Dr. Frank Dorsey, who had been arrested while making a fast run to see a patient who had been crushed by falling iron. For several days leading physicians have been drafting an ordinance that they believe will meet their needs.

The proposed ordinance has succeeded in raising a difference of opinion among physicians who drive automobiles. The majority are in favor of a measure that would assure them immunity from arrest when driving fast. Dr. T. A. Wagner, one of the oldest practitioners in the city, has taken a stand against it. He declares that in the thirty years he has practiced he could count all of the cases on the fingers of one hand where a few minutes saved would have saved the life of a patient. Dr. Wagner uses automobiles exclusively in his practice.

ECONOMICAL POLICE SERVICE AUTO TRIAL.

INDIANAPOLIS, IND., Sept. 9.—Local police have just been given an extensive test with an automobile patrol wagon, at the request of the Board of Public Safety, which is contemplating the purchase of one or more such vehicles to add to the White steam touring car and the Autocar runabout now in service.

The demonstration was made last Saturday and Sunday by the Indianapolis Motor Car Company with a Rapid gasoline delivery wagon, temporarily equipped as a patrol wagon. A test covering forty-eight hours and making all but three calls that came in was made, doing the work, with the one slight exception of two horse-drawn patrol wagons and two relays of horses. Two of the three runs could have been made, as the automobile patrol returned to police headquarters as one of the horse-drawn wagons was leaving.

In the forty-eight hours' time, in fifty-one runs for prisoners, 185 miles was covered. This was accomplished with eighteen gallons of gasoline that cost $2.04. An appropriation will be requested at once and bids will probably soon be asked for.

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H. M. SWETLAND, President

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What Finally Becomes of the Old Automobiles? There is a popular impression, more or less prevalent, that the automobile is a machine of short duration and that it would be difficult to find many that date back to the early days of the industry. Anyone who wishes to disabuse himself of such a notion will not find it difficult to do so, particularly if he be located in one of the larger automobiling centers. He has but to respond to some of the alluring baits held out by a few of the many second-hand dealers, and, equipped with a knowledge of what cars were, and what they are to-day, compare the printed description and its subject, lined up awaiting a purchaser.

To the average autoist of to-day a car of the vintage of 1902 is a relic in about the same class as Fulton's first steamboat, and he would be amazed to find the number in existence, not alone of the year in question, but those preceding it. Like the maid who has left her prime behind, the second-hand man is fond of lopping off years and it does not trouble his conscience much to say 1904 when he should say 1901. It takes one well versed in the models of different years to be able to say with certainty the date of their origin, particularly where foreign cars are concerned, one dealer calmly offering a French car as of the year 1903 until the knowledge of the prospective purchaser forced him to admit that it dated back to 1900, though rebuilding had obliterated many of its early earmarks. American cars of former years are generally easier to distinguish, but nevertheless it is little short of marvelous the number of them that are still far from the scrap heap. That so few of them are seen running in the cities would appear to indicate that their outlet is found in the rural districts. Yet, if a contest of old-timers, such as has been held on the other side, were to be run, the number that would come forth even in New York City would be little short of eye-opening.

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Steel as a Material for Piston Construction. In view of the fact that automobile manufacturers have halted at nothing to improve the quality of their product, materials of a nature so costly as to be absolutely prohibitive to the makers of other kinds of machinery being lavishly employed, the question has frequently risen as to the reason for the non-use of steel for pistons and cylinders. Sheet steel cylinders and pistons have been resorted to in the construction of at least one racing car built on this side of the Atlantic; but doubtless, owing chiefly to the difficulty of properly lubricating this metal in contact with itself, its employment has not been regarded seriously. To take up the matter of pistons alone, the very high speeds found necessary in automobile practice, due to the necessarily restricted size of the motor, make imperative the use of moving parts that shall be as light as possible. The use of steel for this purpose would appear to be the most direct means of achieving this end, beside which the material also has other advantages over the commonly used castiron piston which dates back to the time of the invention of the first prime-movers.

French makers have been concededly in advance of their competitors in other lands in the matter of research along such lines. so that it is not surprising that the use of pistons of pressed steel is now said to be gaining considerable favor with the more prominent automobile builders of that country, although one American maker under license will import these parts and embody them in his 1908 models. The fact is of more than ordinary importance in that it marks the first radical departure from methods of engine construction that have held their own so long as to be considered almost inalterable. The automobile has been responsible for countless hitherto undreamed of innovations, but none so far-reaching as this, so that its outcome will be watched with unusual interest.

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Present Status of the Self-starting Device. For one reason or another, interest in self-starting devices seems to have lapsed into a semi-dormant state during the past season, and at the present writing it appears questionable whether there will be any decided revival apparent in number of the devices exhibited for this purpose at the coming shows. It is generally conceded that ability to restart the motor from the seat, regardless of the length of time it has been standing idle, is a great advantage, but whether it is such to an extent that compensates for the extra complication involved is questionable. Not that there is any particular or insurmountable difficulty inherent in the problem of evolving such a device for automobile use, as there seems to be no reason why stationary practice in the use of compressed air cannot be modified to suit the altered conditions presented by the automobile.

Doubtless, the more general acceptation with which the six-cylinder motor has met, and the fact that there will be a great many more cars of this type turned out during the manufacturing season of 1908, may have had something to do with it. The modern four-cylinder motor has been developed to a point where, under normal conditions, there is considerably less use for the starting crank than formerly, and the six-cylinder motor greatly surpasses it in this respect. Both are self-starting to such an extent that the matter of installing an extraneous device to provide for the small percentage of instances in which they fail, merely to avoid a little work at the crank, is not destined to be generally regarded in a favorable light in the near future.

BAY STATE AUTOISTS HOLD NOTABLE MEET.

NEWCASTLE, N. H., Sept. 9.—The first general meeting and outing of the Massachusetts State Automobile Association of the American Automobile Association, held at the Hotel Wentworth in this town, broke up this afternoon, and the automobilists who were present as representatives of the various clubs throughout the State affiliated with the Massachusetts organization went away well pleased with the results of the gathering. About one hundred members of the State association and ladies arrived Friday evening and others came Saturday, so that there was a large attendance Sunday and to-day.

The principal feature of the meeting was the banquet Saturday evening, and the formal addresses delivered on that occasion and informal discussions later have given the automobilists a better understanding than they ever had before of what the State association aims to accomplish. Moreover, a general policy to be pursued during the coming winter before the Legislature was outlined. The speakers at the banquet included Elliot C. Lee of the Massachusetts Automobile Club, formerly president of the A. A. A.; President L. R. Speare, of the Bay State association; President J. H. MacAlman, of the Boston Automobile Dealers' Association; ex-Congressman Samuel L. Powers, a leading corporation lawyer of Boston; S. L. Haynes, of the Springfield Automobile Club; President Hill, of the Brockton Automobile Club; Representative A. D. Converse; Secretary James Fortescue, of the Bay State association, and others.

President Speare explained the national automobile registration bill which has been drafted by Chairman Terry of the A. A. A. Legislative Board. He stated that this bill, if it became a law, would enable an automobilist to tour wherever he wishes without being hindered by the different State laws.

Mr. Powers spoke in favor of the passage of a bill by the next Massachusetts Legislature making it obligatory for all vehicles using the roads at night to carry lights. He said that by united action on the part of the automobilists he thought the Legislature could be induced to pass the bill. It was the general sentiment of the automobilists present that such a bill would be of much value, not only to automobilists but to drivers of horses.

The other speakers touched upon these subjects and urged the automobilists to obey the laws and respect the rights of other persons who use the highways.

On Saturday there was a baseball game between a team representing the Bay State association and one made up of members of other clubs, and afterwards the automobilists united in a parade which was a part of the celebration of the anniversary of the signing of the peace treaty between Russia and Japan. The concluding feature of the meeting was a series of gymkhana games this afternoon for owners of cars, the prizes being offered by the management of the hotel.

GENERAL MEETING OF A. A. A. DIRECTORS.

A meeting of the board of directors of the American Automobile Association will be held Thursday morning, September 19, at 11 o'clock, at the association's offices, 437 Fifth avenue, New York City.

The national body's entire board, composed of representatives selected by the various State organizations, meets three times a year, the coming session being the second one for 1907. The acts of the executive committee come before this board for approval.

WELLMAN'S POLE TRIP AGAIN POSTPONED.

TROMSOE, Sept. 9.—According to Captain Isachen, in command of the Norwegian Arctic expedition which arrived here to-day from the North, Walter Wellman and his party will probably return here at the end of the present month, abandoning their plan to attempt to reach the pole in an airship for the present year. No start had been attempted up to August 26.

THE DEMAND FOR AMERICAN AUTOS ABROAD.

In response to the constantly increasing number of requests made by American manufacturers as to the conditions prevailing in foreign countries and the standing of the latter as markets for American-made automobiles, the Bureau of Manufactures of the Department of Commerce and Labor at Washington has just compiled the reports of consuls in all parts of the globe, covering the matter very comprehensively. These reports, the majority of which have been published in THE AUTOMOBILE from time to time as they appeared, cover every phase of the use of the automobile in the countries from which they emanate, the market for American machines, the manner in which the latter are regarded by the inhabitants, number of machines of all kinds in use, prevailing prices, demand for accessories and the like, as well as the best methods of obtaining business in such places. Furthermore, they generally go into detail regarding the types and characteristics of the cars most desired and the reasons therefor, so that the pamphlet, which is entitled *Motor Machines*, being Volume XL. of the *Special Consular Reports*, should prove of considerable assistance to manufacturers desiring to increase their export business. Copies may be had on application to the Department of Commerce and Labor, besides which there is much special information on file at the Bureau of Manufactures.

BRITISH COMMERCIAL VEHICLE TRIALS.

LONDON, Sept. 2.—For the long deferred trials of the British Club a total of sixty-two entries has been obtained in the eight classes. Possibly the makers have become tired of waiting for this event, for the list is not as great as had been anticipated.

All the same, the event has been well boomed in the general press and will doubtless serve an important purpose in further popularizing the utility motor vehicle. The trial will consist of twenty-two days' closely-observed running, under full load conditions, and during the tour the vehicles will, at different times, be on exhibition at the important industrial centers. The proceedings commence on September 9. No American vehicle is included in the list.

CHANGES IN N. A. A. M. EXECUTIVE COMMITTEE.

Owing to the embarrassment of the Pope interests, Albert L. Pope tendered his resignation as president of the executive committee of the National Association of Automobile Manufacturers at its September meeting, held last week, together with that of George W. Bennett, who recently severed his connection with the Knox Automobile Company to take charge of the New York branch of the White Company. Mr. Bennett's resignation was accepted as a matter of course, and he was succeeded by M. L. Goss, of the Baker Motor Vehicle Company, but the members of the executive committee unanimously refused to accept Mr. Pope's resignation, instructing the secretary to wire Mr. Pope, demanding the withdrawal of his resignation. In view of this token of regard, Mr. Pope acceded to the wishes of his associates and will continue in office as if nothing had happened.

WHY "THE AUTOMOBILE" WAS LATE.

Readers of THE AUTOMOBILE undoubtedly were surprised at the tardiness of the September 5 issue in reaching them. A delay was caused in the New York Post Office, the entire edition being held up for forty-eight hours until a ruling could be obtained from Washington in reference to the Winton page advertisement, wherein prizes were offered to chauffeurs who obtained the best economical results from their Six-Teen-Sixes. The New York Post Office officials, questioning that the advertisement might violate the lottery provisions of the law, promptly submitted the case to Washington for a decision. The advertisement was ruled "unobjectionable," but few of THE AUTOMOBILE subscribers saw their copies until Monday morning.

EXHIBITORS FOR THE A. C. A. PALACE SHOW

OWING to the tremendous demand for space at the eighth annual show of the Automobile Club of America, held in conjunction with the American Motor Car Manufacturers' Association and the Motor and Accessory Manufacturers, Inc., it has been decided to practically remodel the big exhibition hall of the Grand Central Palace, where the show will open on October 24 and continue until the following Thursday night, inclusive. Instead of dividing the exhibits on three floors, as formerly, there will be a main exhibition hall and two galleries. To do this, the café will be relegated to the second gallery and all the partitions which now separate the upper galleries from the main floor will be torn out. A ten-foot aisle will be cut through the first gallery to a central stairway, connecting with the upper gallery.

The elimination of the partitions will enable visitors to obtain a comprehensive view of almost the entire exhibition, either from the main floor or the upper gallery. The latter will also house the Aero Club's exhibit and a theater.

With the changes, there has been made available a total floor space of 65,279 square feet, of which the members of the American Motor Car Manufacturers' Association will occupy the lion's share, or a total of 23,641 square feet; with 16,087 square feet for the use of the Motor and Accessory Manufacturers, the remainder being given over to commercial vehicles, motorcycles and spaces under the head of "General Allotments," which will be occupied by manufacturers not affiliated with either of the above organizations. In round numbers the latter aggregate 10,000 square feet of space on the main floor for the exhibition of cars and a like amount in the upper gallery for accessories.

Seventy makers of complete vehicles are included in the list of the exhibitors.

MAIN FLOOR—AUTOMOBILES.

Abendroth & Root Manufacturing Company, Newburgh, N. Y.
Acme Motor Car Company, Reading, Pa.
American Motor Car Company, Indianapolis, Ind.
Austin Automobile Company, Grand Rapids, Mich.
Bartholomew Company, The, Peoria, Ill.
B. L. M. Motor & Equipment Company, New York, N. Y.
The C. H. Blomstrom Motor Company, Detroit, Mich.
Buckeye Manufacturing Company, Anderson, Ind.
Cameron Car Company, Brockton, Mass.
Chadwick Engineering Works, Philadelphia, Pa.
The Cleveland Motor Car Company, Cleveland, Ohio.
Colt Runabout Company, 1876 Broadway, New York City.
Crawford Automobile Company, Hagerstown, Md.
Dayton Motor Car Company, Dayton, Ohio.
De Luxe Motor Car Company, Detroit, Mich.
Dolson Automobile Company, Charlotte, Mich.
Dorris Motor Car Company, St. Louis, Mo.
Dragon Automobile Company, Philadelphia, Pa.
Evansville Automobile Company, Evansville, Ind.
Ford Motor Company, Detroit, Mich.
The Forrest City Motor Car Company, Massillon, Ohio.
Gaeth Automobile Works, Cleveland, Ohio.
Garford Motor Car Company of New York, 1540 B'way, N. Y. City.
Gearless Transmission Company, Rochester, N. Y.
Hatfield Motor Vehicle Company, Miamisburg, Ohio.
Holsman Automobile Company, 662 Monadnock Block, Chicago, Ill.
Huntington Automobile Company, Huntington, L. I., N. Y.
Imperial Motor Car Company, Williamsport, Pa.
Jackson Automobile Company, Jackson, Mich.
Thomas B. Jeffery & Company, Kenosha, Wis.
Kingston Motor Car Company, Kingston, N. Y.
Kissell Motor Car Company, Hartford, Wis.
Klink Motor Car Manufacturing Company, Danesville, N. Y.
Knox Motor Truck Company, Springfield, Mass.
Lane Motor Vehicle Company, Poughkeepsie, N. Y.
The Lansden Company, 54 Lackawanna Avenue, Newark, N. J.
The Logan Construction Company, Chillicothe, Ohio.
Mack Bros. Motor Car Company, Allentown, Pa.
Marion Motor Car Company, Indianapolis, Ind.
Maxwell-Briscoe Motor Company, Tarrytown, N. Y.
Miller Motor Car Company, Bridgeport, Conn.
Mitchell Motor Company, Racine, Wis.
Moline Automobile Company, East Moline, Ill.
Moon Motor Car Company, St. Louis, Mo.
Moore Automobile Company, 576 Fifth Avenue, New York City.
Mora Motor Car Company, Newark, N. Y.
Motorcar Company, Detroit, Mich.
Napier Motor Company of America, Jamaica Plain, Boston, Mass.
National Motor Vehicle Company, Indianapolis, Ind.
Nordyke & Marmon Company, Indianapolis, Ind.
Oscar Lear Auto Company, Springfield, Ohio.
Overland Auto Company, Indianapolis, Ind.
J. M. Quinby & Co., 21 Division Street, Newark, N. J.
Pennsylvania Auto Motor Company, Bryn Mawr, Pa.
Premier Motor Manufacturing Company, Indianapolis, Ind.
Ranier Motor Car Company, Broadway and 50th street, N. Y. City.
Rapid Motor Vehicle Company, Pontiac, Mich.
Reliable Dayton Motor Car Company, 375 W. Lake St., Chicago, Ill.
Reliance Motor Car Company, Detroit, Mich.
Reo Motor Car Company, Lansing, Mich.
St. Louis Car Company, St. Louis, Mo.
The Schact Manufacturing Company, Cincinnati, Ohio.
Shawmut Motor Company, Stoneham, Mass.
Simplex Motor Car Company, Mishawaka, Ind.
Smith Auto Company, Topeka, Kan.
Wayne Automobile Company, Detroit, Mich.
Wayne Works, Richmond, Maine Co., Ind.
Welch Motor Car Company, Pontiac, Mich.
York Auto Car Company, York, Pa.
Zim-Rock Motor Car Company, 1853 Broadway, New York City.

MOTORCYCLE SECTION.

The Light Manufacturing Company, Pottstown, Pa.
Ovington Motor Company, 2208 Broadway, New York City.
Reading Standard Company, Reading, Pa.

ACCESSORY FLOOR ALLOTMENTS.

Block A.

Thos. Prosser & Son.
Ventilated Cushion & Spring Co.
N. Y. School of Automobile Engineers.
Central Auto Top Co.
Chas. L. Klauder.
Crown Battery Co.
Traver Blowout Patch Co.

Block B.

C. J. Downing.
Motz Clincher Tire & Rubber Tire Co.
Comstock Shock-Absorber Co.
Pneu 'L Electric Co.

Block C.

Manhattan Electrical Supply Co.
Pierson Motor Supply Co.
Standard Brake Co.
Acetyvone Company.
Ampere Manufacturing Co.
Hill Manufacturing Co.
C. A. Shaler Co.
Randall-Faichney Co.
The Clover Mfg. Co.
Norton Company.
Commonwealth Rubber Co.
Nathan Novelty Mfg. Co.
Patterson, Gottfried & Hunter.
Automobile Supply Mfg. Co.
I. G. Johnson & Co.
The Perfection Spring Co.
E. J. Kaltenbach.
Presto Detachable Rim.
Twombly Goggle Co.

Block D.

The Allen Auto Specialty Co.
W. P. Miller's Sons.

Block E.

Brownell-Trebert Co.
Martin-Evans Co.
William Wooster.
K. W. Ignition Co.
Cycle & Automobile Trade Journal.

Block F.

F. R. V. Auto Parts Co.
Hicks Speed Indicator Co.
Roger B. McMullen.
Lavalette & Company.
Continental Caoutchouc Co.

Block G.

Comptour Innovations Pour Automobiles.
St. John Rubber Tire Co.
Leon Mann Co.
Auto Appliance Co.
J. S. Bretz Co.
Jeffery-DeWitt Co.
Merchant & Evans Co.
The Troy Carriage & Sun Shade Co.
Supplementary Spiral Spring Co.

Block H.

Scandinavian Fur & Leather Co.

Block J.

The Post & Lester Co.
New Departure Manufacturing Co.

Block K.

N. Y. Sporting Goods Co.

Block L.

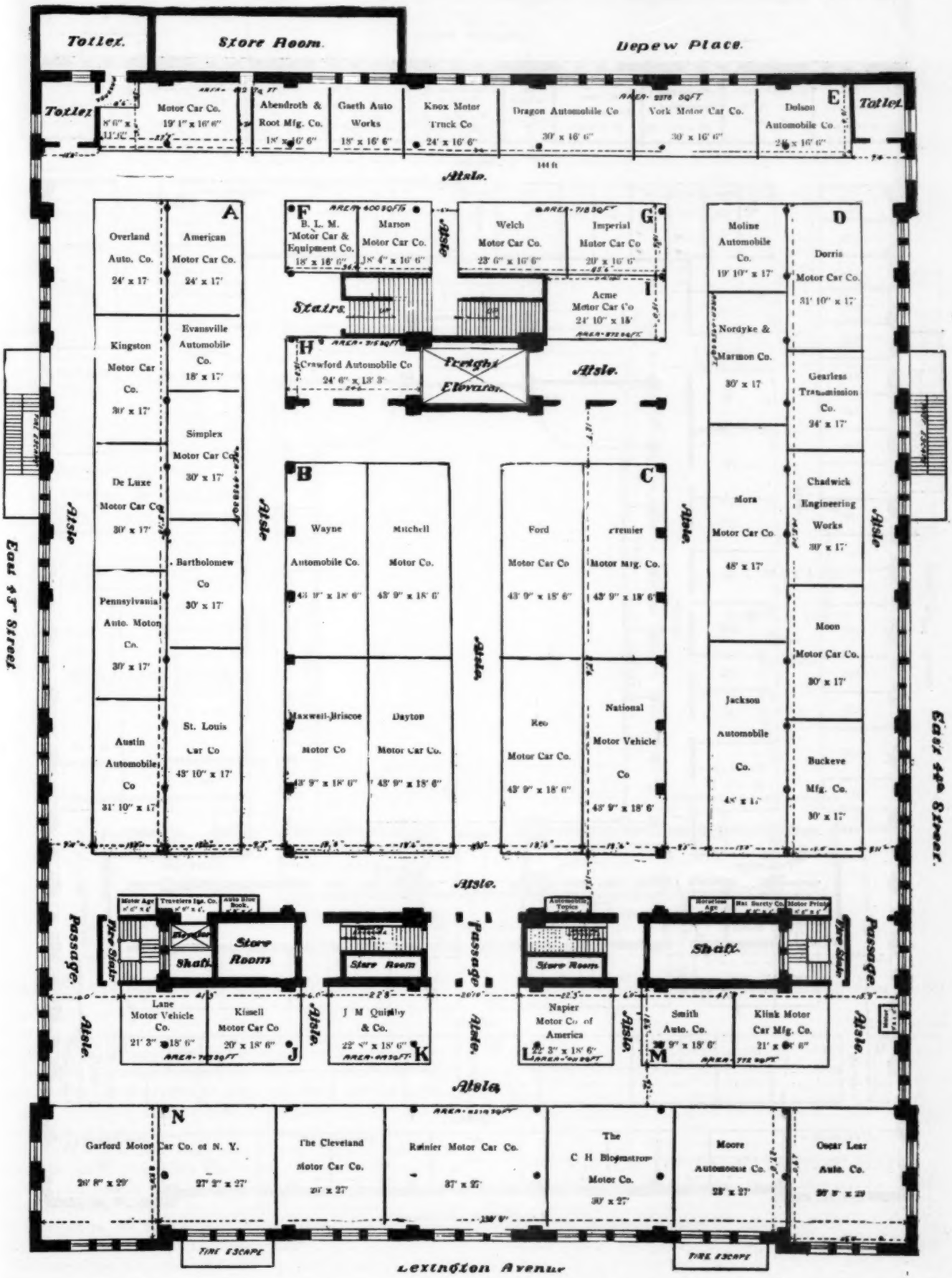
Motor Vehicle Publishing Co.
Mort Howe.

BALTIMORE SHOW THANKSGIVING WEEK.

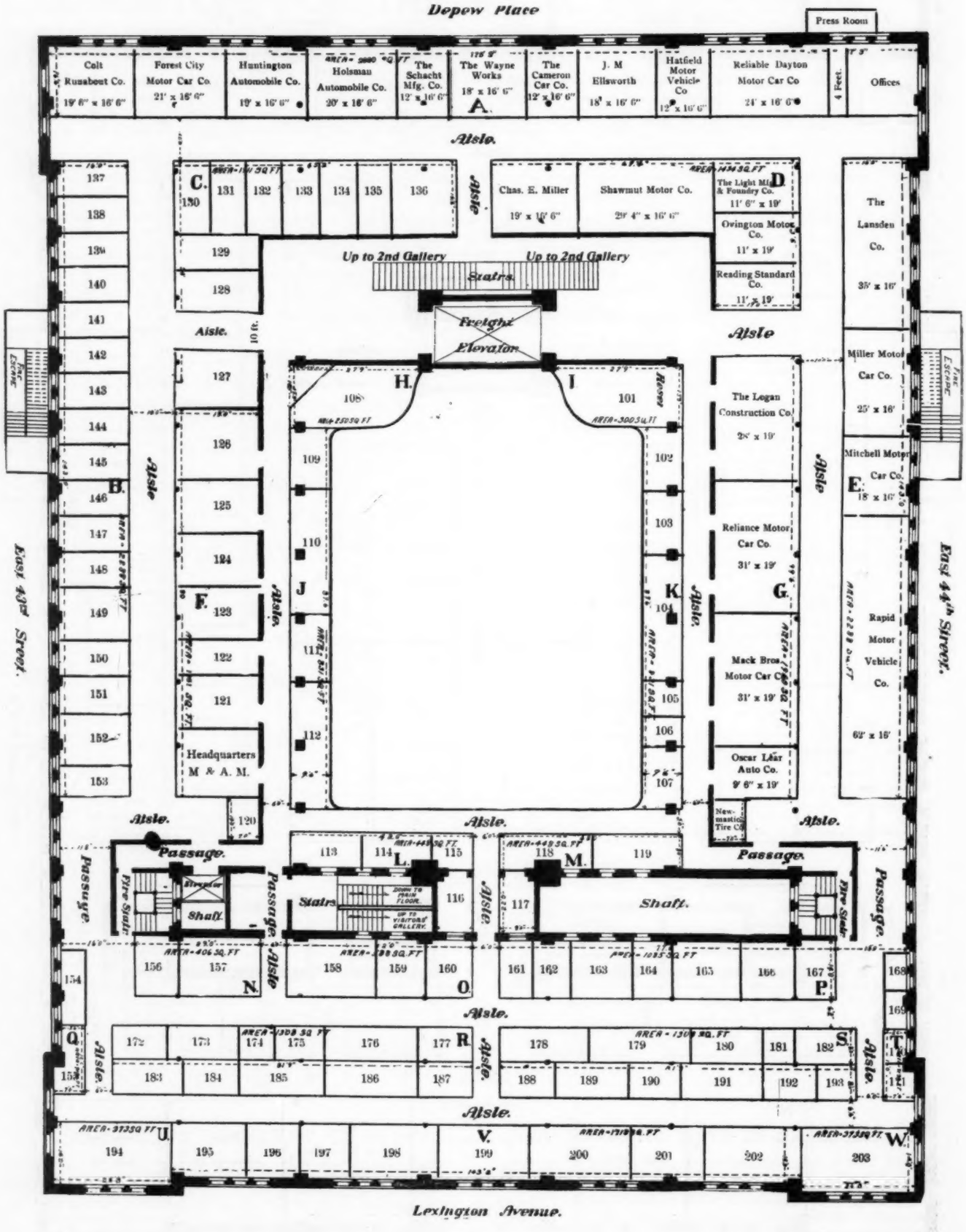
BALTIMORE, Sept. 10.—At a meeting held last night by the Automobile Dealers' Association, arrangements were made for the holding of an automobile show in this city on Thanksgiving week. While the dealers were unanimous in favor of holding the show, there was some little difficulty at first as to time and place. This will bring the show between the Licensed show in New York and the Chicago show. The association, assisted by the A. C. of Maryland, is now negotiating for a building.

NEW HAVEN TO HAVE AN EARLY SHOW.

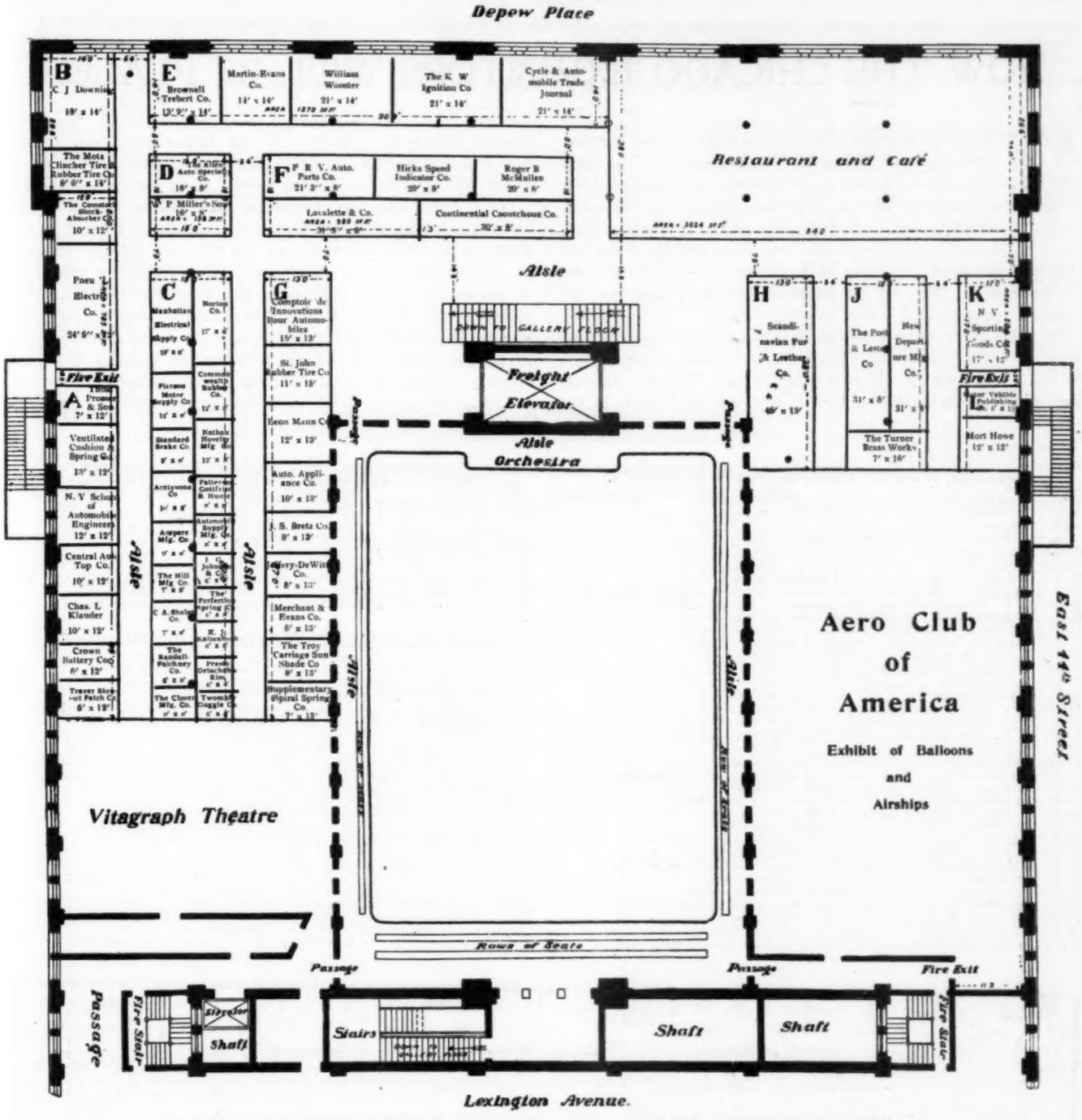
NEW HAVEN, CONN., Sept. 9.—When the New Haven Business Men's Association opens its third big exposition at the Second Regiment Armory, October 26, it is expected that there will be one of the most complete exhibits of automobiles on the floor ever seen in this city. All of the local dealers will be represented, and in connection with the show a number of special events are being planned which will interest not only dealers but owners of cars as well.


Toilet.
Store Room.
Depew Place.
Toilet
Motor Car Co. 19' 1" x 16' 6"
Abendroth & Root Mfg. Co. 18' x 16' 6"
Garth Auto Works 18' x 16' 6"
Knox Motor Truck Co 24' x 16' 6"
Dragon Automobile Co 30' x 16' 6"
York Motor Car Co. 30' x 16' 6"
Dolson Automobile Co 24' x 16' 6"
E
Toilet
Aisle.
144 ft
A
Overland Auto. Co. 24' x 17'
American Motor Car Co. 24' x 17'
Kingston Motor Car Co. 30' x 17'
Evansville Automobile Co. 18' x 17'
Simplex Motor Car Co. 30' x 17'
De Luxe Motor Car Co. 30' x 17'
Bartholomew Co 30' x 17'
Pennsylvania Auto. Motor Co. 30' x 17'
St. Louis Car Co 43' 10" x 17'
Austin Automobile Co 31' 10" x 17'
F
B. L. M. Motor Car & Equipment Co. 18' x 16' 6"
Marson Motor Car Co. 18' 4" x 16' 6"
Welch Motor Car Co. 23' 6" x 16' 6"
G
Imperial Motor Car Co 20' x 16' 6"
Acme Motor Car Co 24' 10" x 18'
Stairs
H
Crawford Automobile Co 24' 6" x 13' 3"
Freight Elevator
Aisle.
Moline Automobile Co. 19' 10" x 17'
D
Dorris Motor Car Co. 31' 10" x 17'
Nordyke & Marmon Co. 30' x 17
Gearless Transmission Co. 24' x 17'
Mora Motor Car Co. 48' x 17'
Chadwick Engineering Works 30' x 17'
Moon Motor Car Co. 30' x 17'
Jackson Automobile Co. 48' x 17'
Buckeye Mfg. Co. 30' x 17'
B
Wayne Automobile Co. 43' 9" x 18' 6"
Mitchell Motor Co. 43' 9" x 18' 6"
Maxwell-Briscoe Motor Co 43' 9" x 18' 6"
Dayton Motor Car Co. 43' 9" x 18' 6"
C
Ford Motor Car Co 43' 9" x 18' 6"
Premier Motor Mfg. Co. 43' 9" x 18' 6"
Keo Motor Car Co. 43' 9" x 18' 6"
National Motor Vehicle Co 43' 9" x 18' 6"
Aisle.
East 43d Street.
East 44th Street.
Passage.
Fire Stair
Store Room
Shaft
Lane Motor Vehicle Co. 21' 3" x 18' 6"
Kissell Motor Car Co 20' x 18' 6"
J
J M Quigley & Co. 22' 8" x 18' 6"
K
Napier Motor Car Co of America 22' 3" x 18' 6"
L
Smith Auto. Co. 39' 9" x 18' 6"
M
Klink Motor Car Mfg. Co. 21' x 18' 6"
N
Garford Motor Car Co. of N. Y. 26' 8" x 29'
27' 2" x 27'
The Cleveland Motor Car Co. 26' x 27'
Rainier Motor Car Co. 37' x 27'
The C H Blomstrom Motor Co. 30' x 27'
Moore Automobile Co. 28' x 27'
Oscar Lear Auto. Co. 26' 5" x 29'
FIRE ESCAPE
FIRE ESCAPE
Lexington Avenue

PLAN OF THE MAIN FLOOR OF THE GRAND CENTRAL PALACE, SHOWING LOCATIONS OF EXHIBITORS.



WHERE THE EXHIBITORS WHO OCCUPY THE GALLERY OF THE GRAND CENTRAL PALACE WILL HOLD FORTH.



ACCESSORIES WILL BE SHOWN ON THE THIRD FLOOR AS OUTLINED IN THE ABOVE DIAGRAM.

MATHEMATICS OF THE WILKESBARRE CLIMB.

One of the prizes offered at this year's climb up "Giants' Despair" at Wilkesbarre, Pa., was the *News* gold medal, to be awarded to the car drawing the greatest weight per horsepower per second. More than half of the two-score participants in all classes decided in the hill-climb were entered in this contest, and the great amount of figuring necessary accounts for the delay in announcing the winners, and they have just been made public by the members of the Wilkesbarre Automobile Club, who acted as judges and referee. The results were calculated by weighing the cars and determining their horsepower according to the recently adopted formula of the A. L. A. M. This gives the weight per horsepower, the time element being computed from the records made on the hill by the various cars.

The committee was composed of P. A. Meixell, W. L. Raeder and B. R. Jones as judges, and D. C. Roberts as referee, all being members of the Wilkesbarre Automobile Club. The following table reveals the standing of the first six cars according to this method of figuring:

Car	Driver	H.P. Pounds per Second
Matheson	Ross Anderson	.5535
Fiat	Kessler	.4984
Matheson	Charles Ward	.4118
Knox	Bourque	.4063
Thomas Flyer	Montague Roberts	.3649
Maxwell	Price	.3268

THE WINTON TRANSCONTINENTAL SHOW.

General Sales Manager Charles B. Shanks, of the Winton Motor Carriage Co., yesterday arrived at the New York City branch of the Winton Company, Broadway and Seventieth street, where the "Model Six-Teen-Six" is to be exhibited for the next two days. It is a certainty that Mr. Winton's latest creation will be thoroughly examined by the many interested in the engineering work of this pioneer of automobiling.

HOW THE CHICAGO EXHIBITORS WILL BE PLACED

AFTER all Chicago again will have the truly national automobile show this year: November 30 to December 7. The members of the rival associations, the Association of Licensed Automobile Manufacturers and the American Motor Car Manufacturers' Association, will sink their differences, at least on show matters, so that the Coliseum and its annex and the First and Seventh Regiment Armories will shelter the "Licensed" and "Independents" alike, not to speak of the many that owe allegiance to neither of these bodies.

In order to make more room for the pleasure vehicles, the First Annual National Exhibition of Commercial Vehicles will be inaugurated under the same auspices, the National Association of Automobile Manufacturers, and will hold forth in the Seventh Regiment Armory. So far twelve manufacturers of cars and six makers of accessories have contracted for space. There will thus be ninety-two exhibitors of complete cars.

Where accessories are concerned, the showing is equally impressive. In the coliseum basement there will be 9 exhibitors, while the galleries will house no less than 118 different exhibits of various small wares. There will be 16 additional exhibitors of accessories in the gallery of the First Regiment Armory, and 6 in the Seventh Regiment Armory, so that in all there will be 237 exhibitors in the Coliseum show and its annex, and 18 at the commercial vehicle show in the Seventh Regiment Armory. These are simply the figures at the present writing, and they will doubtless be considerably augmented.

COLISEUM MAIN FLOOR—AUTOMOBILES.

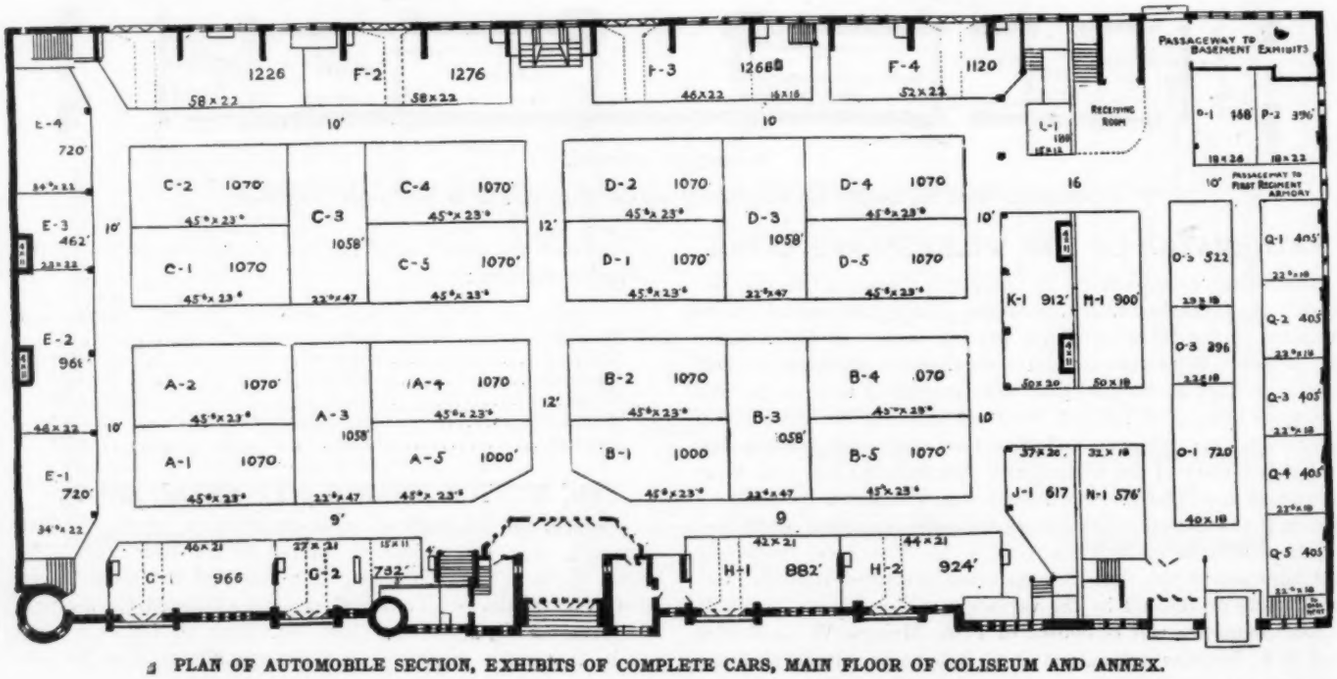
A-1. Packard Motor Car Company, Detroit, Mich.
A-2. Locomobile Company of America, Bridgeport, Conn.
A-3. Wayne Automobile Company, Detroit, Mich.
A-4. Electric Vehicle Company, Hartford, Conn.
A-5. Knox Automobile Company, Springfield, Mass.
B-1. Woods Motor Vehicle Company, Chicago, Ill.
B-2. Reo Motor Car Company, Lansing, Mich.
B-3. Studebaker Bros. Manufacturing Company, South Bend, Ind.
B-4. E. R. Thomas Motor Car Company, Buffalo, N. Y.
B-5. F. B. Stearns Company, Cleveland, Ohio.
C-1. Apperson Bros. Automobile Company, Kokomo, Ind.
C-2. Northern Motor Car Company, Detroit, Mich.
C-3. Elmore Manufacturing Company, Clyde, Ohio.
C-4. Olds Motor Works, Lansing, Mich.
C-5. Lozier Motor Company, New York.
D-1. Dayton Motor Car Company, Dayton, Ohio.
D-2. Pope Motor Car Company, Hartford, Conn.
D-3. Pope Manufacturing Company, Hartford, Conn.
D-4. H. H. Franklin Manufacturing Company, Syracuse, N. Y.
D-5. The Bartholomew Company, Peoria, Ill.
E-1. Babcock Electric Carriage Company, Buffalo, N. Y.
E-2. Premier Motor Manufacturing Company, Indianapolis, Ind.
E-3. Matheson Motor Car Company, Wilkesbarre, Pa.
E-4. Maxwell-Briscoe Motor Company, Tarrytown, N. Y.
F-1. George N. Pierce Company, Buffalo, N. Y.
F-2. The White Company, Cleveland, Ohio.
F-3. Stevens-Duryea Company, Chicopee Falls, Mass.
F-4. Haynes Automobile Company, Kokomo, Ind.
G-1. Winton Motor Carriage Company, Cleveland, Ohio.
G-2. Royal Motor Car Company, Cleveland, Ohio.
H-1. Thomas B. Jeffery & Company, Kenosha, Wis.
H-2. National Motor Vehicle Company, Indianapolis, Ind.
J-1. Waltham Manufacturing Company, Waltham, Mass.
K-1. Mitchell Motor Car Company, Racine, Wis.
L-1. Pungs-Finch Auto & Gas Engine Company, Detroit, Mich.

ANNEX FIRST FLOOR—AUTOMOBILES.

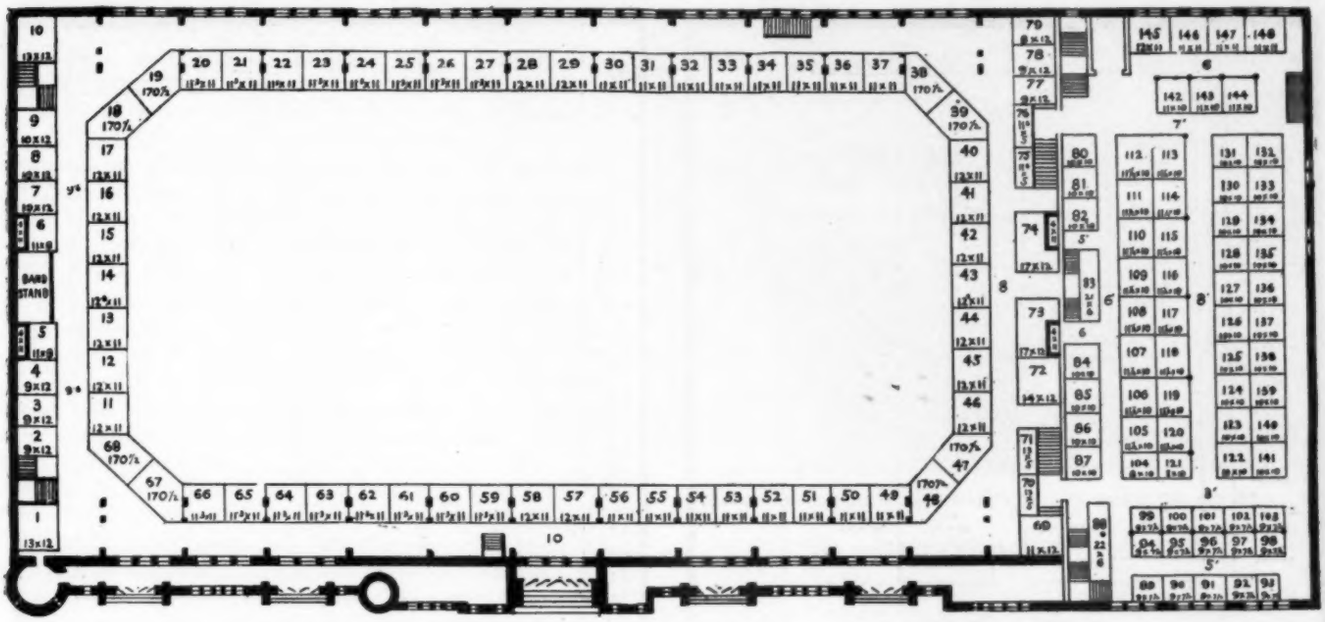
M-1. Autocar Company, Ardmore, Pa.
N-1. Dragon Automobile Company, Philadelphia, Pa.
O-2 and 3. Cadillac Motor Car Company, Detroit, Mich.
O-1. Baker Motor Vehicle Company, Cleveland, Ohio.
P-1. Deere-Clark Motor Car Co.
Q-1. Welch Motor Car Company, Pontiac, Mich.
Q-2. Peerless Motor Car Company, Cleveland, Ohio.
Q-3. Peerless Motor Car Company, Cleveland, Ohio.
Q-4 and 5. Corbin Motor Vehicle Corp'n, New Britain, Conn.

FIRST REGIMENT ARMORY—AUTOMOBILES.

A-1. Buckeye Manufacturing Company, Anderson, Ind.
A-2. Columbus Buggy Company, Columbus, Ohio.
A-3. Knight & Kilbourne, Chicago, Ill.
A-4. American Locomotive Automobile Company, New York.
B-1. Rauch & Lang Carriage Company, Cleveland, Ohio.
B-2. Western Tool Works, Galesburg, Ill.
B-3. Aerocar Company, Detroit, Mich.
B-4. Gearless Transmission Company, Rochester, N. Y.
C-1. Cleveland Motor Car Company, Cleveland, Ohio.
C-2. Moon Motor Car Company, St. Louis, Mo.
C-3. Pierce Engine Company, Racine, Wis.
C-4. Tincher Motor Car Company, South Bend, Ind.
D-1. Austin Automobile Company, Grand Rapids, Mich.
D-2. De Luxe Motor Car Company, Detroit, Mich.
D-3. Jackson Automobile Company, Jackson, Mich.
D-4. American Motor Car Company, Indianapolis, Ind.
E-1 (W. 1-2). Chicago Coach & Carriage Company, Chicago, Ill.
E-1 (E. 1-2). Staver Carriage Company, Chicago, Ill.
E-2. C. H. Blomstrom Motor Company, Detroit, Mich.
E-3. Dolson Automobile Company, Charlotte, Mich.
E-4. Acme Motor Car Company, Reading, Pa.
E-5. Monarch Motor Car Company, Chicago Heights, Ill.



PLAN OF AUTOMOBILE SECTION, EXHIBITS OF COMPLETE CARS, MAIN FLOOR OF COLISEUM AND ANNEX.



LAY-OUT FOR SECOND FLOOR OF COLISEUM AND COLISEUM GALLERY FOR ACCESSORY EXHIBITS.

E-6. Moline Automobile Company, East Moline, Ill.
F-2. Nordyke & Marmon Company, Indianapolis, Ind.
G-1. Holsman Automobile Company, Chicago, Ill.
G-2. Wayne Works, Richmond, Ind.
G-3 and 4. Rainier Company, New York.
G-5. The Kissel Motor Car Company, Hartford, Wis.
G-6. Smith Automobile Company, Topeka, Kansas.

COLISEUM BASEMENT—AUTOMOBILES.

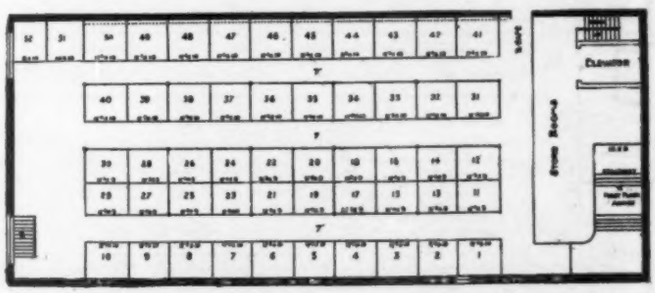
15 and 16. Schacht Manufacturing Company, Cincinnati, Ohio.
17 to 20. Reliable Dayton Motor Car Company, Chicago, Ill.
23 to 25. Aurora Motor Works, Aurora, Ill.
29 and 30. Pullman Motor Car Company, Chicago, Ill.
31 to 33. Auburn Automobile Company, Auburn, Ind.
34. Hatfield Motor Vehicle Company, Miamisburg, Ohio.
36 to 40. Cornish-Friedburg Motor Car Company, Chicago, Ill.
41 to 43. C V I Motor Company, Jackson, Mich.

COLISEUM BASEMENT—ACCESSORIES.

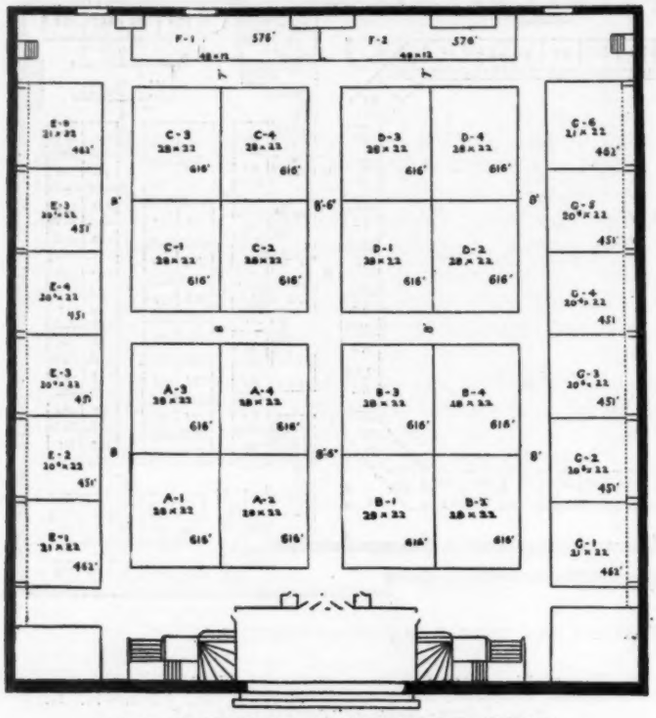
1. The K-W Ignition Company, Cleveland, Ohio.
2. C. A. Shaler Company, Waupun, Wis.
3. Norton Company, Worcester, Mass.
4. Empire Automobile Tire Company, Trenton, N. J.
5. Chicago School of Motoring, Chicago.
6. Randall-Faichney Company, Boston, Mass.
7. Michelin Tire Company, Milltown, N. J.
8. T. Alton Bemus, Boston, Mass.
9. American Aluminum Coating Company, Pittsburg, Pa.
10. Thomas Prosser & Son, New York.
21 to 22. Roger B. McMullen, Chicago, Ill.
24 to 26. Manhattan Screw & Stamping Company, New York.
45. Jeffery-DeWitt Company, Newark, N. J.
46. Warner Clutch Company, Chicago, Ill.
47. Triple Action Spring Company, Chicago, Ill.
48. Duplex Coil Company, Fond du Lac, Wis.
49 and 50. Longdin-Brugger Company, Fond du Lac, Wis.
51. Pfanstiehl Electrical Laboratory, North Chicago, Ill.
52. Vivax Storage Battery Company, Chicago, Ill.

COLISEUM GALLERY—ACCESSORIES.

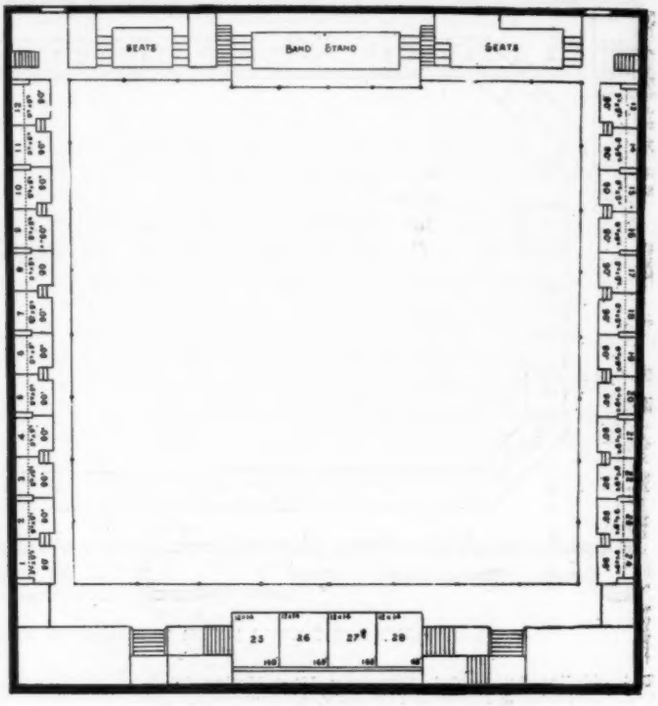
1. Kinsey Manufacturing Company, Dayton, Ohio.
2 to 4. Sprague Umbrella Company, Norwalk, Ohio.
5. Never Miss Spark Plug Company, Lansing, Mich.
6. Adam Cook's Sons, New York.
7. Indestructible Steel Wheel Company, Chicago.
8. Imperial Brass Company, Chicago, Ill.
9. Republic Rubber Company, Youngstown, Ohio.
10. Motor Car Specialty Company, Philadelphia, Pa.
11. Valentine & Co., Chicago.
12. Electric Storage Battery Company, Philadelphia, Pa.
13. McCord & Co., Chicago, Ill.
14. Auto Improvement Company, New York.
15. Wray Pump & Register Company, Rochester, N. Y.
16 and 17. Aurora Automatic Machinery Company, Aurora, Ill.
18. Pennsylvania Rubber Company, Jeannette, Pa.
19. Hartford Suspension Company, New York.
20. Wm. Cramp & Sons Ship & Engine Bldg. Co., Philadelphia, Pa.
21. R. H. Smith Manufacturing Company, Springfield, Mass.
22. Chicago Battery Company, Chicago.
23. Whitney Manufacturing Company, Hartford, Conn.
24. Motsinger Device Manufacturing Company, Pendleton, Ind.
25. Wheeler & Schebler, Indianapolis, Ind.
26 and 27. Morgan & Wright, Detroit, Mich.
28. R. E. Dietz Company, New York.
29. The Dayton Electrical Manufacturing Company, Dayton, Ohio.
30 and 31. Hartford Rubber Works Company, Hartford, Conn.
32 and 33. Timken Roller Bearing Axle Company, Canton, Ohio.
34 and 35. Diamond Rubber Company, Akron, Ohio.
36. Brown-Lipe Gear Company, Syracuse, N. Y.
37. Spicer Universal Joint Manufacturing Co., Plainfield, N. J.
38 and 39. G & J Tire Company, Indianapolis, Ind.
40 and 41. Badger Brass Manufacturing Company, Kenosha, Wis.
42. Veeder Manufacturing Company, Hartford, Conn.
43 and 44. Gray & Davis, Amesbury, Mass.
45. National Carbon Company, Cleveland, Ohio.
46. Rose Manufacturing Company, Philadelphia, Pa.
47 and 48. The B. F. Goodrich Company, Akron, Ohio.
49. C. F. Splitdorf, New York.
50. Hyatt Roller Bearing Company, Harrison, N. J.
51. Shelby Steel Tube Company, Pittsburg, Pa.
52. Long Manufacturing Company, Chicago, Ill.
53 and 54. Fisk Rubber Company, Chicopee Falls, Mass.
55. Diamond Chain & Manufacturing Company, Indianapolis, Ind.
56. Joseph W. Jones, New York.
57. Warner Gear Company, Muncie, Ind.
59 and 60. Goodyear Tire & Rubber Company, Akron, Ohio.
61. Baldwin Chain & Manufacturing Company, Worcester, Mass.
62. Pantasote Company, New York.
63. Warner Instrument Company, Beloit, Wis.
64. Swinehart Clincher Tire & Rubber Company, Akron, Ohio.
65. New York & New Jersey Lubricants Company, New York.
66. Remy Electric Company, Anderson, Ind.
67 and 68. Firestone Tire & Rubber Company, Akron, Ohio.
70. Cook's Standard Tool Company, Kalamazoo, Mich.
71. Oliver Manufacturing Company, Chicago, Ill.
72 and 73. S. F. Bowser & Co., Inc., Fort Wayne, Ind.
74. Edmunds & Jones Manufacturing Company, Detroit, Mich.
75. Byrne-Kingston & Co., Kokomo, Ind.
76. Kokomo Electric Company, Kokomo, Ind.
77. Weed Chain Tire Grip Company, New York.
78. Hancock Manufacturing Company, Charlotte, Mich.
79. Leather Tire Goods Company, Newton Upper Falls, Mass.
80. Hotchkin Manufacturing Company, Chicago, Ill.
81 and 82. Auto Accessories Manufacturing Company, Detroit, Mich.
83. Duff Manufacturing Company, Allegheny, Pa.
84. Western Malleable Steel Company, Detroit, Mich.
85. Midgley Manufacturing Company, Columbus, Ohio.
86. R. E. Hardy Company, New York.
87. Joseph Dixon Crucible Company, Chicago, Ill.
88. Stewart & Clark Manufacturing Company, Chicago.
89. Atwater-Kent Manufacturing Company, Philadelphia, Pa.
90 and 91. Ajax-Grieb Rubber Company, New York.
92. Stackpole Battery Company, St. Mary's, Pa.
93. Ross Gear & Tool Company, Lafayette, Ind.
94. J. H. Sager Company, Rochester, N. Y.
95. Hoffecker Company, Boston, Mass.
96. C. Cowles & Co., New Haven, Conn.



SPACES TO BE UTILIZED IN COLISEUM BASEMENT.



PLAN OF MAIN FLOOR, FIRST REGIMENT ARMORY.



ACCESSORY SPACES IN FIRST REGIMENT GALLERY.

98. The Auto Pump Company, Springfield, N. Y.
99. Gray-Hawley Manufacturing Company, Detroit, Mich.
100. Lipman Manufacturing Company, Beloit, Wis.
101. National Battery Company, Buffalo, N. Y.
102 and 103. Corcoran Lamp Company, Cincinnati, Ohio.
104. Gemmer Manufacturing Company, Detroit, Mich.
105. Briscoe Manufacturing Company, Detroit, Mich.
106. Heinze Electric Company, Lowell, Mass.
107. Wm. G. Robinson & Son Company, Baltimore, Md.
108. Oliver Instrument Company, Minneapolis, Minn.
109. Whiteley Steel Company, Muncie, Ind.
110. Atwood Manufacturing Company, Amesbury, Mass.
111. Standard Roller Bearing Company, Philadelphia, Pa.
112. Prest-O-Lite Company, Indianapolis, Ind.
114. Connecticut Telephone & Electric Company, Meriden, Conn.
115. Diezemann Shock Absorber Company, Hoboken, N. J.
116. Avery Portable Lighting Company, Milwaukee, Wis.
118. Kilgore's Manufacturing Company, Old Town, Me.
119. Uncas Specialty Company, Norwich, Conn.
120. Witherbee Igniter Company, New York.
121. Muncie Auto Parts Company, Muncie, Ind.
122 and 123. Hendee Manufacturing Company, Springfield, Mass.
124. Harley-Davidson Motor Company, Chicago.
125. Armac Motor Company, Chicago.
127. Fowler, Manson, Sherman Cycle Manufacturing Co., Chicago.
128 and 129. Pope Manufacturing Company, Hartford, Conn.
130 and 131. Consolidated Manufacturing Company, Toledo, Ohio.
132 and 133. Merkel Motor Company, Milwaukee, Wis.
134. L. C. Chase & Co., Boston, Mass.
135.
136. American Electrical Novelty & Manufacturing Co., New York.
137. Vesta Accumulator Company, Chicago.
138. Igniter Appliance Company, Cleveland, Ohio.
139 and 140. Rands Manufacturing Company, Detroit, Mich.
141. Hornecker Motor Manufacturing Company, Whiting, Ind.
142. Gabriel Horn Manufacturing Company, Cleveland, Ohio.
143. C. T. Ham Manufacturing Company, Rochester, N. Y.
144. Holley Bros. & Company, Detroit, Mich.
145. The National Oil Pump & Tire Company, Dayton, Ohio.
146. Limousine Carriage Manufacturing Company, Chicago.
147. A. R. Mosler & Company, New York.
148. Sherwin-Williams Company, Cleveland, Ohio.

FIRST REGT. ARMORY GALLERY—ACCESSORIES.

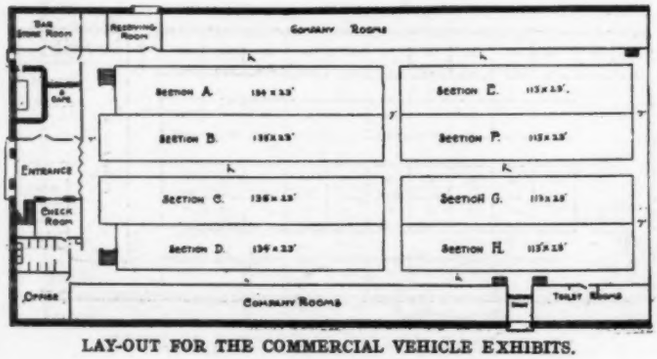
1. Standard Lamp & Manufacturing Company, Chicago.
2. The Motor Way, Chicago.
3 and 4. Continental Caoutchouc Company, New York.
5 to 8. Eugene Arnstein, Chicago.
10. Acetylene Company, New York.
12. Ventilated Cushion & Spring Company, Jackson, Mich.
15 and 16. Franco-American Auto & Supply Company, Chicago.
17. Cycle Auto & Trade Journal, Philadelphia, Pa.
18. McKanna Manufacturing Company, Chicago.
19. Standard Varnish Works, Chicago.
20. Motz Clincher Tire & Rubber Company, Akron, Ohio.
21. Morrison, McIntosh & Co., Grinnell, Iowa.
22. Horseless Age, New York.
23 and 24. Motor Age, Chicago.
25 to 28. Excelsior Supply Company, Chicago, Ill.
29. Class Journal Company, New York.

SEVENTH REGT. ARMORY—COMMERCIAL CARS.

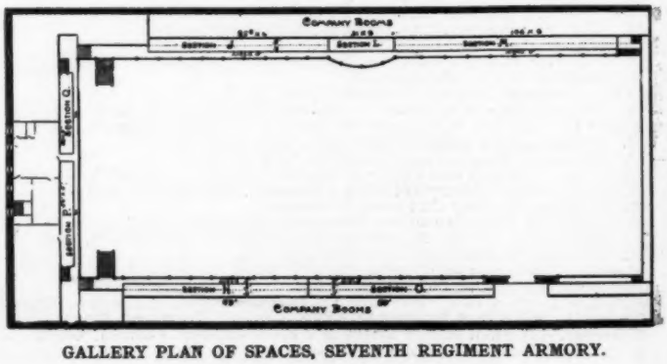
Section A. H. H. Franklin Manufacturing Company, Syracuse, N. Y.
Section B. Buckeye Manufacturing Company, Anderson, Ind.
Rapid Motor Vehicle Company, Pontiac, Mich.
The White Company, Cleveland, Ohio.
Section C. General Vehicle Company, New York.
Logan Construction Company, Chillicothe, Ohio.
Reliance Motor Car Company, Detroit, Mich.
Section D. Studebaker Bros. Manufacturing Co., South Bend, Ind.
Section E. Pope Motor Car Co., Hartford, Conn.
Section F. Mitchell Motor Car Company, Racine, Wis.
Couple Gear Freight Wheel Co., Grand Rapids, Mich.
Section H. A. D. Meiselbach Motor Wagon Co., N. Milwaukee, Wis.

ACCESSORIES.

Section J. The Hartford Rubber Works Company, Hartford, Conn.
Firestone Tire & Rubber Company, Akron, Ohio.
Section L. The Diamond Rubber Company, Akron, Ohio.
Section M. Indestructible Steel Wheel Company, Chicago, Ill.
Section N. Timken Roller Bearing Axle Company, Canton, Ohio.
Hartford Auto Parts Company, Hartford, Conn.



LAY-OUT FOR THE COMMERCIAL VEHICLE EXHIBITS.



GALLERY PLAN OF SPACES, SEVENTH REGIMENT ARMORY.

ANNUAL MEETING OF LOGAN COMPANY.

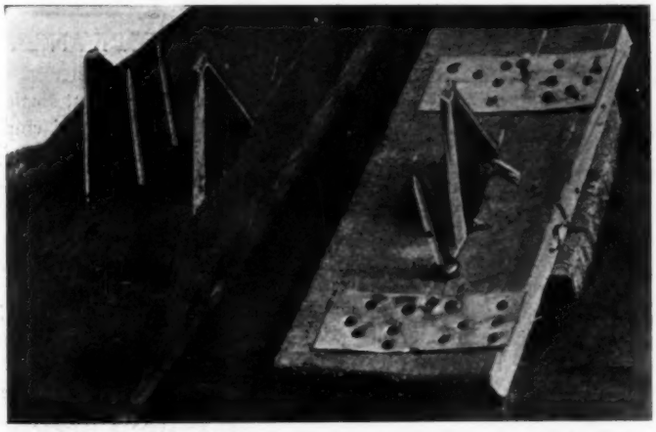
CHILLICOTHE, O., Sept. 9.—The regular annual meeting of the stockholders of the Logan Construction Company of Chillicothe, O., was held at the company's plant on the evening of September 3, a large majority of the stock being represented.

Reports of the company's business for the past year were gone into in detail and found most satisfactory. The regular quarterly dividend on the preferred stock was passed and the following directors were elected: Jos. L. Schilder, B. A. Gramm, Geo. F. Hunter, Geo. H. Smith, C. F. Smith, John Kellohofer, W. A. Hall, E. L. Bergman and B. E. Stevenson. The stockholders present inspected the new models which are in course of construction for the season of 1908 and were impressed with the fact that the trucks which are being turned out are the most perfect, strongest, and most efficient which the company has ever been able to manufacture. The Logan starts on its new year with every prospect of success.

Recently Mr. Gramm, who has been the general manager of the company since its inception, assumed, in addition to his other duties, that of buyer, succeeding Mr. Twyman. The latter also had been sales manager, B. E. Stevenson succeeding him.

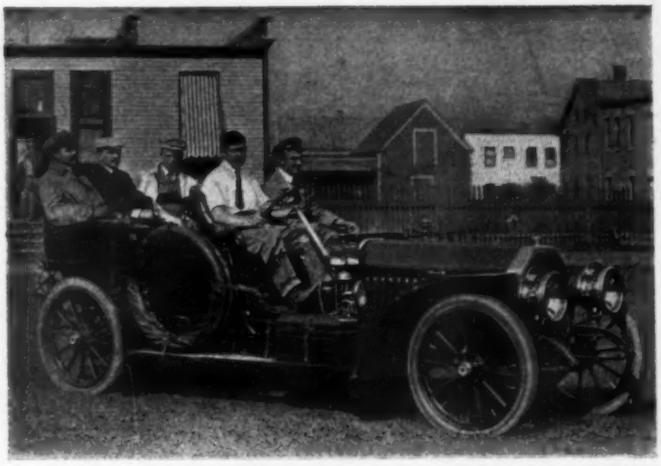
YOUTH WREAKS HAVOC WITH TIRES.

CHESTER, CONN., Sept. 9.—Finding time heavy on his hands and the facilities abundant, Edwin Priest, a 17-year-old boy of this place, living on the pike between Chester and Tylerville,



WHAT THE CONNECTICUT YOUTH BROUGHT FORTH TO TEST TIRES.

exercised his mechanical ingenuity on a contrivance that has at once brought him fame. So far as known, he has no particular grudge against autoists, but probably pneumatic tires struck him as easy game worth hunting. He set to work, and with the aid of three knives abstracted from the cutter blade of a mowing machine, an old chisel and a supply of ample-sized wire-nails, he evolved the fiendish devices shown in the accompanying photograph. To make them more effective he ground the edges of the various cutters, and then carefully concealed one of the boards in each of the ruts of a narrow part of the road. Having placed them to the best advantage, the inventor retired to the shade of the cornstalks and watched. W. H. Scoville, of Hartford, Conn., came bowling along in his car and passed over the trap serenely; few inventions have ever worked more admirably on the occasion of their first trial. Before going 100 yards Mr. Scoville realized that three of the car's tires were flat, and examination showed the job to have been a most thorough one. Search was made for the cause during the wait for repairs, and Priest's devices were soon unearthed. They were turned over to F. B. Cooley, of Hartford, who happened along in his machine, and he handed them over to Highway Commissioner McDonald, who caused Priest's arrest. He was fined $7 and costs, amounting to $27.11.



THE BURMAN-PARKHURST PARTY IN THE PEERLESS "SIX."

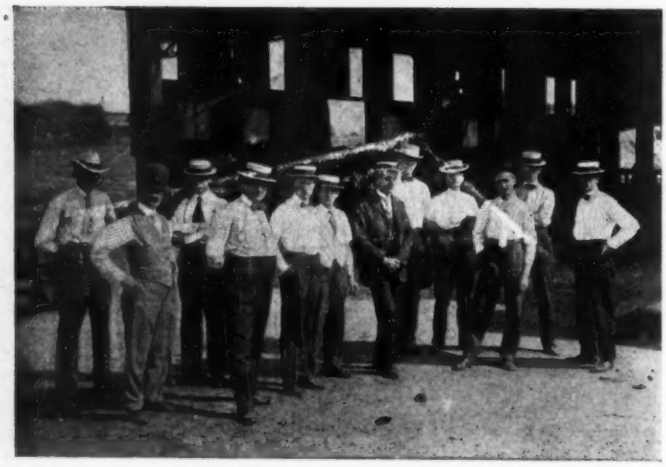
PEERLESS "SIX" ON A LONG JOURNEY.

At the end of two years of careful study, Charles Schmidt, designer for the Peerless Motor Car Company, of Cleveland, has completed a six-cylinder car of 57 horsepower. This car is a marvel in design and construction. Its motor construction is along the same general lines as the new Model 18, which is the new 30-horsepower model offered for the season of 1908. After severe tests and try-outs already given the car, E. H. Parkhurst, vice-president of the Peerless Company, with a party including Charles Burman, who has driven a Peerless car with perfect score in the last two Glidden tours, left Cleveland, September 4, for a pleasure tour through the East. Leaving Cleveland, the route included Pittsburg, Bedford Springs, Baltimore, Philadelphia (where two days will be spent), New York (two days), Boston (two days), then through the Berkshire Hills to Albany, through the Mohawk Valley to Utica, Syracuse, Rochester, Buffalo, along the lake shore to Cleveland. The trip will take about ten days.

HANSHUE BREAKS CALIFORNIA RECORD.

Striving after inter-city records is still a popular pastime in California, and the latest attempt on the Los Angeles-Bakersfield time of 8:37, has just been lowered to 7:18 by Harris Hanshue, driving a 20-horsepower Reo. The distance is 100 miles, and represents a continuous climb, many of the grades being very long and stiff, some being given as high as 30 per cent. for a mile or more at a stretch. The roads are far from being favorable, and to vary the monotony of always climbing there are no less than sixty-seven fords to be crossed on the way, some of them being almost three feet deep. In fact, the roads are considered the roughest in that part of California. The run was made without a mishap of any kind.

HANSHUE AND THE REO WHICH LOWERED A CALIFORNIA RECORD.



STEEL EXPERTS AT PLANT OF UNITED STATES STEEL CO., CANTON, O.

FORD COMPANY TESTS VANADIUM STEEL.

Considerable interest has attached to the great amount of attention devoted by the Ford Motor Company, Detroit, Mich., to the production of vanadium steel in commercial quantities for use in automobile construction, and this culminated in the recent making and rolling of the last batch of this steel by the Ford experts at the plant of the United Steel Company, Canton, O. The "heat" consisted of 45 tons of vanadium-chrome steel for crankshafts, and was made under the personal supervision of C. H. Wills and F. Griffith, metallurgists of the Ford Motor Company and the United Steel Company, respectively. Those present were: O. F. Transue, Transue & Williams Company, Alliance, O.; H. W. Alden, Timken Roller Bearing Company, Canton, O.; F. W. Hedgland, Hedgland Mfg. Co., Canton, O.; H. C. Haight, F. C. Groth, Cleveland-Canton Spring Company, Canton, O.; C. W. Cathcart, Hess-Pontiac Spring Company, Pontiac, Mich.; C. H. Wills, E. S. Huff, Ford Motor Company; C. L. Bockus, Western Malleable Company (drop forge department), Detroit; D. Goddard, White Company, Cleveland; B. F. Little, sales manager, and Harry R. Jones, secretary, U. S. Steel Company, Canton, O.

HOW KNOX COMPANY WILL RENEW.

SPRINGFIELD, MASS., Sept 9.—Creditors of the Knox Automobile Company, which recently made a voluntary assignment, met last week, Wednesday, to formulate plans for the reorganization of the company. About 75 per cent. of the indebtedness was represented and practically unanimously adopted a scheme presented by a committee of five creditors, providing for the capitalization of the company's debts of $500,000 into 8 per cent. cumulative preferred stock and making the company's present capital stock $360,000 common. A. N. Mayo, the receiver, will continue until the reorganization is perfected. Under the new arrangement the creditors will have complete control of the company's business.

The net earnings of the company, after the payment of the 8 per cent. dividends, less the moneys required for working capital, will be applied under the new arrangement to the retirement of the preferred stock. All claims of less than $100 will be paid in cash. For all claims over $100 preferred stock of a par value of $100 will be issued for every $100 of indebtedness, except that any indebtedness over $100 or a multiple thereof—that is, a fractional part of one share—shall be paid in cash. The preferred stock will bear the date of January 1, 1908, and the indebtedness to be capitalized will bear interest up to that date.

The committee of creditors appointed to confer with the stockholders and suggest a plan of reorganization consisted of Robert A. Knight and C. C. Lewis, Springfield; Walter V. Morse, Marlboro; Clarence E. Whitney and Arthur Hyde, Hartford, Conn. About 200 creditors, holding claims against the company of $8,000, will be paid in cash under the new arrangement.

EMILE LAMBERJACK RETURNS TO PARIS.

After a brief visit of fourteen days in America in connection with the affairs of the Michelin Tire Company, Emile Lamberjack sailed to-day on the French Line steamer for Paris. In an interview before leaving M. Lamberjack declared that the American Michelin factory would start operation in one month, and that the American-made tire would be on the market in about two months.

KINGSTON FROM KINGSTON IN A. M. C. M. A.

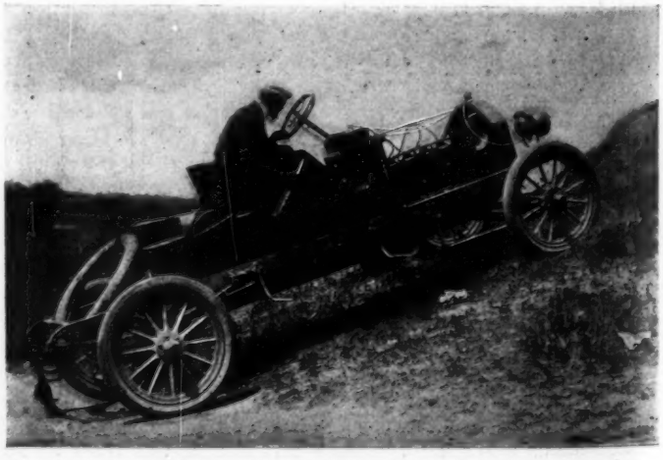
Among the late concerns to be admitted to membership in the American Motor Car Manufacturers' Association prior to the allotment of space for the Grand Central Palace show, was the Kingston Motor Car Company, of Kingston, N. Y., in which are interested E. R. Thomas and O. F. Thomas, the New York bankers and motor enthusiasts; F. E. Moscovitz, well known in the trade, and W. Gould Brokaw.

CLEVELAND TO HAVE N. Y. HEADQUARTERS.

As a part of its plans for the selling season of 1908, the Cleveland Motor Car Company, Cleveland, O., builders of the car of the same name, will make its headquarters in New York City on and after October 1. No changes will be made in the manufacturing end, the complete chassis being shipped from Cleveland to New York, where the finishing will all be carried out by a well-known firm of coach builders, the entire distribution of the Cleveland product being handled from this end in future.

CONTINENTAL'S CREDITABLE PERFORMANCE.

Doubt has frequently been expressed as to the genuineness of the many high-gear *stunts* arranged by the publicity man, so that as a condition precedent to showing what the Continental could do in this respect C. S. Johnston, the car's designer, not only locked the shifting mechanism in the high-speed position, but also disconnected the lever. Accompanied by E. T. Hale, the New Haven, Conn., agent of the Knox, Mr. Johnston left the New York headquarters at 1,359 Broadway at 6 P.M. last Thursday evening. By taking the route via White Plains, South Norwalk and Bridgeport, a great many hills were included, in addition to which much of the road was in process of repair and very rough. In the entire distance of 90 miles it was only necessary to allow the car to slide down one hill backward in order to get a new start, and New Haven was reached at 9 P.M. There were still some doubting Thomases, and, to show them, Mr. Johnston took the car out to Canner street hill, New Haven, the next day. The road is rough, and the grade is reputed to be 18 per cent., while it is said that it has never been taken on the high-gear before. From a standing start on Whitney avenue, the ascent was made without difficulty.



C. S. JOHNSTON TACKLING A STIFF GRADE WITH HIS CONTINENTAL.

BRIEF ITEMS OF NEWS AND TRADE MISCELLANY

The annual show luncheon of the American Motor Car Manufacturers' Association will be given at the Manhattan Hotel, Tuesday, October 29, of the week of the automobile show at the Grand Central Palace.

In spite of all the 24-hour races that have been held, the National still holds the honor of having the record performance of 1,094 3-16 miles to its credit. The National also holds the 1,000-mile track record, having covered that distance in 21:58:00. The drivers were Jack Clemens and Charles Merz.

From now on Toledo, O., will be surrounded by a cordon of warning signs bearing the curt notice "Slow down to ten miles an hour." There has been much complaint on the score of speeding on roads leading into the city, and after considering various suggestions the local officials have adopted this as one method toward curbing it.

The Automobile Dealers' Association of Pittsburg has just received its charter. It was incorporated with a capital of $5,000, and the following officers were elected: Treasurer, W. N. Murray, of the Standard Automobile Company; directors, W. H. La Fontaine, of the Atlas Automobile Company, and A. L. Banker, of the Banker Brothers Company.

While driving on the Lancaster turnpike near Wilmington, Del., John Ruth and a companion had an unusual experience. Without warning an automobile crashed into them in the dark, upsetting the buggy and throwing them out. The owner of the car inquired as to the damage, and without further words shoved a $20 bill in Mr. Ruth's hand and was off.

The Rainier Company makes announcement that it was a 35-horsepower Rainier, not a Mercedes, as was stated in two New York dailies, that enabled J. P. Morgan to catch the Pittsfield express at Lee, Mass., recently, he having missed the train at Pittsfield. The trip of twelve miles was made in Charles Lanier's car, which is a Rainier.

That trade conditions are not alone not as black as they are painted, but not black at all, is amply evidenced by the order which W. H. Kirkpatrick, sales manager of the Peerless Motor Car Company, Cleveland, O., carried away with him from Philadelphia on the occasion of his recent eastern trip. The order is for a large number of Model 18, the Peerless 1908, and delivery is required by November 1.

Early requests for Dragon agencies have necessitated tours of inspection of the ground before placing contracts for 1908, and as a result President John Kane Mills and Sales Manager A. L. Kull, of the Dragon Automobile Company, have been making an extended tour of the Eastern States, while John W. Haynes, assistant sales manager, has been carrying on the same work in the South and Southwest.

The Standard Roller Bearing Company, of Philadelphia, has recently made large additions to its plant. The buildings extend over a half-mile of ground from end to end, having a floor space of over 500,000 square feet. The concern employs over 1,500 men. The business has grown to such proportions as to necessitate the establishing of a department of publicity, which will be conducted by C. Dickens Sternfels, who has been identified in a similar capacity with the Arthur Koppel Company, Pittsburg, Pa., for the past three years.

For the purpose of testing out one of the new 60-horsepower Thomas cars, it was recently sent on a 1,000 mile trip from the works at Buffalo, N. Y., with the intention of covering that distance in three days. In addition to Montagu Roberts, who drove, George Salzman, Mason Hatch, M. Chedru, Edmond Thomas, and Mr. Haas, representing the sales and mechanical departments of E. R. Thomas Motor Company, rode in the car. The 1,000 miles scheduled were covered in 2 days 15 hours, and immediately upon its arrival at the Houpt garage in New York City, on Sunday morning, the tanks were refilled and the return trip to Buffalo undertaken, arriving there early the next day.

W. D. Newerf, Pacific Coast representative of the Goodyear interests, is getting considerable advertising for the Goodyear tires out of the unusual performance of a tourist racer during the coast track campaign. The car was raced at San Bernardino, Los Angeles, Lakeside, Fresno, Sacramento, San Francisco, Seattle, Portland, Everett and Salt Lake City, or 26 events in all, ranging from 3 to 25 miles, winning a majority of them. From the time the car left Los Angeles until it returned, it was not necessary to change one of the original Goodyear tires. The W. D. Newerf Rubber Company now has stores in Los Angeles and San Francisco and agents in Fresno, San Diego, San Jose, Portland, Seattle and other towns on the coast.

NEW AGENCIES ESTABLISHED.

The O. L. Gooden Motor Car Company, 541-543 Ellicott street, Buffalo, will handle the Winton in that city next season. The company was recently organized with Mr. Gooden, who is an experienced automobile salesman, at its head.

For the benefit of the Southern California trade, Morgan & Wright have just opened a new branch house at 118-120-122 East Tenth street, Los Angeles. The M. & W. business on the Coast has grown so rapidly during the past year that it was found impossible to handle it properly from the San Francisco branch. The Detroit rubber goods makers will carry a complete line of their products at the new branch and make it one of the best equipped rubber stores on the Coast.

PERSONAL TRADE MENTION.

Frank G. Dwight, Jr., for the past two years with the Knox Automobile Company, has just taken charge of the Philadelphia office of the Jones Speedometer Company.

C. A. Gilmore, general representative of the Knox Automobile Company, Springfield, Mass., has resigned to become associated with the Boston branch of the White Company.

Arthur Lesser, for some time connected with the sales department of the Rainier Company, has just gone with Wyckoff, Church & Partridge, and will be associated with A. J. Picard in the Stearns department.

W. M. Botto, sales manager of the Palmer & Singer Manufacturing Company, is visiting the Matheson agents throughout the Western States for the purpose of instructing them regarding the improvements incorporated in the 1908 models.

G. G. Westerfield, secretary of the Westerfield Motor Company, Anderson, Ind., manufacturers of gasoline engines, has just joined the forces of the Staver Carriage Company, Chicago, as superintendent of the latter concern's automobile department.

W. A. Woods, formerly connected with the New York branch of the Oldsmobile Company, has just become identified with the interests of the Cleveland Motor Car Company, Cleveland, O., having taken up the duties of sales manager of that concern September 1.

F. A. Nelson, who has represented the Diamond Rubber Company in Southern California through the San Francisco office for the past two years, has just been appointed manager of a new branch house about to be established at Los Angeles, at 1207-1209 Main street. Mr. Nelson has already taken up his new duties.

R. E. Ingersoll, who has acted as a special representative for the Reo and Premier cars in the Central States for the past two years, has been appointed sales manager for the New York branch of R. M. Owen & Company. Prior to taking on the lines in question he was identified with the sales department of the Pope Manufacturing Company for four years.

NEW TRADE PUBLICATIONS.

The Bridgeport Vehicle Company, Bridgeport, Conn., builders of high-grade automobile bodies and whose factory is devoted exclusively to automobile work, has issued a circular showing the ample factory of the company and illustrating the special type of limousine body for which the house is noted. The company builds bodies to order, both of wood and of aluminum, to fit any car.

"Bulletin Number 13" is the title of the latest piece of literature to come from the publicity works of the White Company, Cleveland, O., and it is devoted almost entirely to an attractively illustrated description of the genesis of the White steamers, showing the highly developed methods of production on a large scale. The principal departments and their work are all shown photographically, giving some idea of the extent of the plant, which has been made proof against fire to such an extent that the company carries its own risk. A few pages of the bulletin are devoted to an announcement of the new White models for 1908, which show but few changes as compared with their predecessors of the present season, while the prices remain the same.

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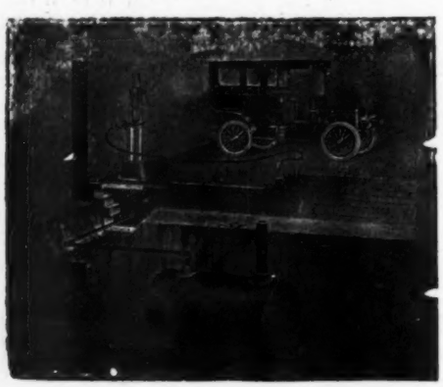

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